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An index to the eighty-fifth volume of THE RAILWAY GAZETTE covering the issues from July 5 to December 27, 1946, has been prepared, and is now available free of charge on application to the publisher

DIESEL RAILWAY TRACTION

The February issue of this RAILWAY GAZETTE Publication, illustrating and describing developments in Diesel Railway Traction, will be ready on February 1, price 2s.

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THE RAILWAY GAZETTE
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The Standing Committee on the Transport Bill

THE Standing Committee of Members of the House of Commons before which the Transport Bill will be considered, is expected to meet shortly, probably on Tuesday. Elsewhere in this issue we give a list of the 51 members who will constitute this Committee, which will sit under the Chairmanship of Sir Charles MacAndrew, the Conservative Member for Ayr & Bute. The political allegiance of the members may be summarised as follows: Labour, 29; Conservative, 16; Liberals, 2; Ulster Unionist, 1; Liberal National, 2; and Independent 1. During the Second Reading of the Bill the desirability of the committee stage being taken in Committee of the whole House was urged on the Government, but this was refused. It is at this stage that endeavours will be made to secure amendments to many of the clauses of the measure. The preponderance of Labour members on the Standing Committee, based on their party's representation in the House, will hamper these endeavours, but it is known that there are some points on which concern is felt in the ranks of Labour.

The State as an Employer

During the debate on the second reading of the Transport Bill, a Labour Member, Mr. W. Monslow, expressed the hope that when transport was nationalised the Government would be a model employer. He seemed under the impression that nationalisation would be a factor in promoting the well-being of the people, by which, presumably, he meant in particular lower-paid employees. A good many Labour Members of Parliament and trade union officials hold this view, although it is difficult to understand why, for there has been little evidence that the State is as good an employer as the generality of large-scale undertakings operated under private enterprise. Post Office workers have had examples of the working of the State mind. There was the case of the postman who was unable to leave his "temporary" status for a permanent position because his height was half an inch short of the minimum laid down. More recently, the *Daily Mail* has reported a "concession" by the Postmaster-General, which is that men who served in the 1914-18 war, and are still 40 or under, can apply to be retained with 1914-18 veterans up to the age of 45 who were awarded a disability pension. A little arithmetic will serve to show the hollowness of this "concession," for a man now aged 40 would have been 11 years old at the end of the 1914-18 war.

British Investments in Latin America

For many years now the *South American Journal* has compiled tables showing the amount of British capital concerned with Latin America and its percentage return, together with the amounts which have received no interest, and summaries of this compilation have been given in our columns. The latest statistics issued by our contemporary show that in 1946 the total British capital invested in Latin America was £887,454,994, compared with £920,252,266 for 1945. Interest received was £26,793,783 or 3·9 per cent., against £25,208,743 or 2·7 per cent. The total on which no interest was received last year was £395,980,652, or rather less than the £399,760,032 for 1945. So far as the investment in Latin American railways is concerned, however, the improvement shown in the general details did not apply. Although the amount invested, £434,879,389, was slightly greater than the £433,830,354 returned for 1945, and the amount of interest at £7,132,793 was more than the £6,562,021 received in that year, the rate per cent. fell from 1·5 in 1945 to 1·1 in 1946. The amount on which no interest was paid was £307,988,178, compared with £306,916,644 in the previous year.

The British Engineers' Association—Annual Report

In reviewing the work of the British Engineers' Association for the past twelve months, Mr. A. W. Berry, Director, laid special stress on the activities of the Export Committee, whose Chairman, Mr. C. P. Lister, had completed an 80,000-mile world tour during the year, and no fewer than half of whose members by overseas visits had gained first-hand knowledge of various markets. The range of day-to-day problems connected with overseas territories and dealt with by the staff had increased enormously. The number of inquiries from 83

countries had increased by nearly 40 per cent., and, in addition, there had been many questions to deal with arising from efforts to overcome domestic bottlenecks by imports. A great deal of work had been done in an attempt to bring into conformity with modern requirements the Model Conditions of Contract necessary in connection with engineering projects, which, when completed, should prove of inestimable value both to purchaser and seller. Mr. Berry also referred to the work carried out in connection with the forthcoming International Conference on Trade & Employment, which is to be held at Geneva in April this year, and concerning which the Council had submitted two communications to the Government dealing respectively with non-tariff and tariff and preference questions. The Transport Committee had been strengthened by the addition of the transport managers of five of the larger member companies.

Overseas Railway Traffics

The two weeks under review have seen a total decrease of ps. 784,000 in Buenos Ayres & Pacific traffics, but the other three principal British-owned Argentine systems have recorded increases throughout the fortnight, totalling ps. 535,000 on the Buenos Ayres Great Southern, ps. 299,000 on the Buenos Ayres Western, and ps. 160,900 on the Central Argentine. Entre Rios and Argentine North Eastern results, also, have kept on the right side of the preceding year. Nitrate traffics for the first fortnight of 1947 decreased by £3,245, and Central Uruguay takings lost £19,587 in the two weeks ending January 18, the heaviest decline occurring in the week ended January 11, when the decrease was £13,100. This company now shows a deficit on the aggregate from July 1, 1946, of £52,619 in comparison with the previous year. Some results are compared below:—

	No. of week	Weekly traffic	Inc. or dec.	Aggregate traffic	Inc. or dec.
Buenos Ayres & Pacific*	29	2,050	- 202	64,206	+ 1,657
Buenos Ayres Great Southern*	29	4,097	+ 273	98,587	+ 4,279
Buenos Ayres Western*	29	1,339	+ 146	36,222	+ 1,897
Central Argentine*	29	3,227	+ 101	91,645	+ 2,884
Canadian Pacific	3	1,339,000	+ 7,250	3,592,250	- 155,750

* Traffic returns in thousands of pesos

Canadian Pacific traffics began 1947 with an adverse comparison of £109,000 in the first week, but reduced the deficit to £54,000 in the second week, and recorded a gain of £7,250 in the week ended January 21.

L.M.S.R. Carriage and Wagon Stocks

In the March issue of *Carry On*, the L.M.S.R. staff newspaper, Sir William Wood points out that the L.M.S.R. carriage stock is 1,354 less than in September, 1939, and that 493 more are out of service for repair, making a total reduction in the available stock of 1,847. The L.M.S.R. wagon stock cannot be considered an isolation because of the common user of railway-owned and privately-owned requisitioned wagons, but the number of wagons available to all railways is 10 per cent. less than before the war. No less than 81,442 railway-owned and 73,751 privately-owned requisitioned wagons are now stopped for repair or scrapping. There are 100,000 privately-owned wagons over 46 years old, which were used before the war largely for short trips between collieries and ports. During the war they were unequal to the strain of more extensive use on longer hauls and are being stopped constantly for repair. As these obsolete wagons become due for heavy repairs, they will be withdrawn; already, some 15,000 wagons have been earmarked for this treatment. So far as the L.M.S.R. is concerned, 2,923 new wagons were put into service between July 1 and December 31 last year, and 3,160 were withdrawn. The new vehicles have increased the capacity of the stock by nearly 6,500 tons.

Electric Current Supply on Coaches

Concern is being expressed in the United States at the rapidly increasing demand imposed on coach electric current supply by modern travel amenities. In addition to lighting, power is now needed for air conditioning, electric air filtration and odour elimination, refrigeration of drinking water and for food preservation, and for other purposes. The maximum

rated generator capacity that it is desirable to operate by axle drive is 30 kW., and every generator of this type, operating at full load, imposes a demand of over 60 h.p. on the locomotive. On through passenger runs, it cannot be expected to obtain more than 65 per cent. of the rated capacity of any generator; moreover, from the standpoints of cost, life, weight, and efficiency, storage batteries of more than 1,250 amp-hr. capacity are not practicable. A sub-committee which reported recently on this matter to the 1946 annual meeting of the Electrical Section, Mechanical Division, Association of American Railroads, emphasised the desirability of making available on passenger cars a 3-phase, 60-cycle, 220-volt a.c. supply. The use of alternating current demands a constant-speed source of power to drive the alternator, and this, the committee considered, could best be obtained by the use of a small diesel-driven generator plant which would provide current whether the car were running or standing. Each car would be independent and there would be no tax on locomotive power. In Great Britain, hitherto, the only installation of a diesel-driven power plant of this description has been to an L.M.S.R. kitchen car for electric cooking purposes.

The First Big Aluminium Bridge Span

Further details have now come to hand relating to the 100-ft. aluminium span, designed for Coopers E-60 loading, recently erected at Grasse River Bridge in New York State and briefly described on page 598 in our issue of November 29, 1946. It appears that to increase the resistance of the 14 S-T aluminium alloy to corrosion, a thin coating of pure aluminium was rolled integrally with the high-tensile alloy. As compared with the 9 ft. \times $\frac{1}{2}$ -in. webs of the generally-similar steel 100-ft. spans in the same bridge, the aluminium webs measure 10-ft. \times $\frac{1}{2}$ -in., and are each built up of four plates requiring three splices. There are two aluminium top cover plates, 14 in. \times $\frac{1}{2}$ in., extending the full length of each girder; one bottom plate is also full length and the other 61 ft. long. To provide additional web-stiffening, a line of 5-in. \times $3\frac{1}{2}$ -in. \times $\frac{1}{8}$ -in. horizontal aluminium angles is fitted between the vertical stiffeners on the insides of the two girders and 2 ft. 6 in. below the top of the web. This span is believed to be the first of any size and of such strength to be fabricated entirely of aluminium alloys.

The Design of the First Aluminium Span

Because of their low shearing strength, the aluminium rivets in the Grasse River span are more closely spaced than in steel practice. With the exception of 116 in the cross-bracings, which could not be reached by the ram, all rivets were air-ram-driven cold, and are of A 17 S-T alloy. The 116 are of 53 S-W alloy, and were driven with pneumatic hammers at a temperature of about 1,000° F., the heat-treating temperature of this alloy. In the design of the girders, the greater elasticity of the alloy as compared with steel is counteracted partly by the 1 ft. extra depth of the girder webs, and partly by the abnormal camber, namely, $\frac{1}{8}$ in. at the quarter points and $\frac{1}{4}$ in. at the centre of the aluminium span. This camber is equivalent to deflection caused by the full dead load plus half the live load for which the span is designed. Total deflection under full live load is expected to be just over 2 in., as compared with $\frac{1}{2}$ in. in the 100-ft. steel spans. To allow for an expansion in the alloy twice that of steel, rocker bearers 13 $\frac{1}{2}$ in. high are used, so designed that the span can move 2 in. either way from the plumb. The rockers were set so as to be plumb at 100° F. Actually, the setting was based on the fact that $\frac{1}{4}$ in. out of plumb had to be allowed for each 8 $\frac{1}{2}$ ° below 100° when the rockers were set.

Coal Economies on the French National Railways

The coal situation in France, although not, perhaps, grave, continues to cause some anxiety and to necessitate an appreciable reduction in train services. The French National Railways require about 800,000 tonnes a month, and it has been decided to effect, as between January 10 and March 27, subject to changes in the position, a reduction of about 21 per cent. in steam-hauled, and 12.5 per cent. in electrically-hauled, passenger services, which is calculated to give a monthly saving of 35,000 tonnes of locomotive coal and a daily saving

of 110,000 units of electric power. Our contemporary, *La Vie des Transports*, commenting on the problem, asks whether it is not possible to effect what it calls a real economy, that is, to carry substantially the same traffic as before and yet cut down considerably the consumption of fuel. It takes certain figures relating to the coal consumed month by month by the National Railways and the number of freight wagons loaded, which, as damage was repaired and other effects of the war period eliminated, showed a decided improvement in the specific consumption and hence the efficiency of working. It concludes, however, that since the autumn there has been a retrogression, and that less efficient working is now resulting in a waste as great as the economies sought by the cuts in train services.

A Dispatcher's Views on C.T.C.

The extension of centralised traffic control in America has created increased interest in the technical developments which have taken place in the last few years, and resulted in some interesting achievements in long-distance controls by the use of carrier currents and other devices. An article in *The Railroad Magazine* by Mr. P. Josseland, whose revision of Forman's book, "Rights of Trains," was reviewed in our issue of July 26, 1946, and who has returned to the service of the Western Pacific Railroad, gives a dispatcher's point of view on this type of working, which calls for some change of habits. For example, when trains meet, he must be ready to deal with the point movements promptly, whereas previously he had not to concern himself with such details. Mr. Josseland considers that as much skill is needed as before, and that more work is involved. In addition, employees' hand-cars cannot be relied on to operate the track circuits, and so cannot be handled as trains, thus creating extra responsibility for the dispatcher. Much trouble is caused if a line wire fails, at times involving changing all points concerned over to hand control to avoid risks of some false movement. Nevertheless, the new system is a great step forward, and is proving itself daily.

Railway Fuel Policy and British Exports

AT the instance of the Government, an appreciable number of main-line locomotives is in process of conversion from coal to oil fuel. Primarily, the change is intended to make more coal available for other industries, of which the pressing needs cannot be satisfied by the use of alternative types of fuel. From the standpoint of the immediate general economic position of the country, the change-over may have little to commend it, and could have been adopted only under pressure of the exceptional circumstances which have arisen from the inability of the mining industry to step up coal production to conform to the present intensive demands of the home and export trades. Not the least of the disadvantages of the conversion from coal to oil is the fact that fuel-oil supplies must be imported, and paid for largely, if not entirely, in foreign currencies, of which the supply at the disposal of Great Britain is extremely limited, and, in the absence of further intensified exports, there is little prospect of accumulating more dollars and other foreign exchange.

Without attempting to make a virtue of a necessity, it may be pointed out that the change of policy represented by the adaptation of British locomotives to burn oil offers compensations in the shape of opportunities for the development of British trade which, if seized, will not only neutralise immediate disadvantages, but prove highly remunerative eventually. The long-term possibilities will appeal to the school of locomotive engineers which believes that the future of rail transport lies in the substitution of diesel and diesel-electric for steam traction. Already, there are railways in other parts of the world where the steam engine has been superseded entirely by diesel locomotives, among the chief advantages of which are the exceedingly economical use of oil fuel and infinitesimal water consumption. In consequence of the ability of diesel locomotives to operate over very long distances without refuelling and replenishment of water supplies, there is a considerable saving in cost of fuel and water depots, which is important in highly industrialised and densely populated countries, such as Great Britain, where land values are high and suitable sites hard to come by.

For many years, steam locomotives have been in the forefront of Great Britain's valuable export trades, but it would be unwise to disregard present world tendencies towards dieselisation of railways. Whereas some believe that the demand for steam stock may be expected to recede, albeit gradually, orders for diesel equipment will increase steadily. Hitherto, the existence of extensive coal deposits in the British Isles, from which supplies could be made available readily at comparatively low cost, and the almost total lack of domestic oil production have retarded the application of the diesel engine to main-line working, though use has been made of diesel shunting locomotives. Thus, British manufacturers of diesel stock were deprived of a home market, which placed them at a disadvantage in participating in one of the world's rapidly expanding export trades. If the employment of imported oil fuel for firing steam locomotives on the home railways provokes investigation into methods of using it economically, the general application of diesel traction to main-line working may not be far off, and the ultimate benefits to Great Britain's export trade should prove considerable.

During the past few months, a British Trade Mission has pursued negotiations for a new agreement relating to trade and commerce with Argentina. One of the most pressing problems demanding solution is the production and shipment of acceptable manufactures from Great Britain to meet the prodigious cost of meat supplied from Argentina. Roughly one-third of the Argentine railways are in public ownership, and it has long been the policy of the State Railway Administration to discontinue the use of steam locomotives entirely, as experience has proved diesel traction to be more suitable for railway operations in that country, where runs are very long, water supplies inferior as well as inadequate, and imported coal expensive and hard to obtain. The Argentine example is one of many to be found throughout the 20 republics of Latin America.

Nigerian Railway

TRAFFIC on the Nigerian Railway during the year ended March 31, 1946, maintained a steady and intensive level, little effect being experienced from the cessation of hostilities in Europe and the Far East. The year was markedly heavy, the movement of a groundnut crop of 294,000 tons involving the utmost use of all equipment, particularly locomotives, which were put to the most intensive running they had ever had. Another heavy undertaking was the transport by rail of practically all the repatriated soldiers landed at Lagos for demobilisation. The report for the year shows a result that is not unsatisfactory, in spite of the effects of a general strike which began on June 22, 1945, and continued until August 4, 1945. In this period, revenue earned was £48,450, as compared with £402,235 for the corresponding weeks of the preceding year. Operating receipts of the railway for the whole year were £3,622,838, and road transport services contributed £41,255, giving total operating receipts of £3,664,093. The total operating expenditure was £2,152,156, leaving an operating surplus of £1,511,937, and a net surplus, after deducting charges, of £409,973. Some operating results are compared in the table below:—

	1944-45	1945-46
Passenger journeys	5,341,545	4,262,420
Tonnage hauled	1,709,690	1,424,843
Average haul (miles)	292	309
	£	£
Gross receipts	4,004,698	3,664,094
Operating expenditure	2,085,028	2,152,156
Operating surplus	1,919,670	1,511,937
Renewals contribution	430,000	430,000
Interest on capital	949,547	949,547
Net surplus	661,716	409,973

At midnight on June 21, 1945, when the general strike began, nearly 20,000 railway employees ceased work, and the railway came to a complete standstill with most of the trains in transit left standing at the nearest station. Emergency plans had been made for such a situation, and with the aid of a handful of European supervisory and inspecting officers, assisted by volunteers from the army, a skeleton train service was resumed on June 26. Throughout the six to seven weeks of the strike, running only in daylight hours, and manned almost entirely by Europeans, a skeleton service was maintained three days a week. Regular train services were resumed as from

August 20, but on account of the serious shortage of locomotives, accentuated by arrears of maintenance during the strike, it was necessary to reduce passenger services by 30 per cent. Although working to its utmost capacity during the year covered by the report, the railway was unable to move from Kano to the coast the full tonnage of groundnuts so urgently needed in Europe, except by spreading the movement over twelve months. Normally, the groundnut crop is evacuated between November and April, and in pre-war days it was the practice to move some 40-50 thousand tons to port a month. The report points out that, in spite of the strike, the total tonnage hauled during the year was 1,424,843 tons, which was higher by 172,989 tons than the highest pre-war year.

Satisfactory progress was made in relaying the 160 miles of line between Jebba and Minna with new 60-lb. rails and sleepers of local timber. A new sleeper-treatment depot, with a capacity of 80 sleepers an hour, was brought into operation at Zungeru in September, 1945. Another major project completed was a three-mile branch line from Enugu, with a new marshalling yard and station to serve the colliery at Obwetti. This yard has been designed to make the fullest possible use of gravitation, and is the first of its kind to be introduced on the railway. An average of some 2,300 tons of coal a day has been loaded at this point. Although the report is not yet published in the comprehensive form of pre-war issues, its interest has been increased this year by the inclusion of several illustrations and charts. The proportion of the total revenue obtained from various types of traffic is shown by a diagram, from which it can be seen that goods traffic contributed 59.76 per cent., coal traffic 4.96 per cent., and coaching traffic 17.06 per cent., the remainder being contributed by Government traffic (7.59 per cent.), telegraphs and sundries (9.59 per cent.), and road transport (1.04 per cent.).

The Prospects of Railway Engineers

GRAVE concern is being felt and expressed by some of the highest railway authorities in America at the small number of university men now selecting railway engineering as a career. Two reasons are given: (a) the cessation of all new railway construction, and (b) the influence of the bankers on U.S. railways for some years and consequent restriction of replacement and reconstruction works.

There is no doubt that construction in any form almost invariably is much more attractive to the engineer than open-line maintenance routine. In this country, opportunities for gaining experience in new construction work have been extremely limited for many decades, and even such undertakings as large-scale reconstructions and widenings have been few.

Until the world slump set in about 1929, the Dominions, India, and the Colonies, however, were more fortunate, and in India especially, extensive new construction works were previously in hand. One railway alone, the North Western, had a construction programme involving the completion of 300 miles of new railway annually over a period of a number of years, and including very big bridges over such rivers as the Indus, Jhelum, Chenab, and Ravi, all of which were built. Though the programme was curtailed prematurely by the slump, this mileage was opened to traffic in the first year of completion, and some 3,000 miles of line, including alternative routes, were surveyed in three years. Nearly 40 trained engineer officers were employed in the Survey & Construction Department of that railway at the time.

In America the railway managements are blamed by the educational authorities for not making the railway engineering profession more attractive to students and so failing to secure the services of the best-qualified men. The technical Press also suggests that the Association of American Railroads, with advantage, might initiate actuarial investigations to ascertain the number of engineers likely to be required by the railways for engineering and administrative positions, and inform the universities accordingly. It might be pointed out justifiably that, though maintenance and operation lack the glamour of new construction, the railways still offer many opportunities for stimulating work demanding engineering skill of a high order. Our own railways can endorse this view, and the articles appearing in these columns from time to time

describing engineering achievements, are eloquent testimony to the ability and initiative of the railway engineer at home and in the Empire.

In most countries there is also another important factor that should attract the ambitious engineering student, namely, the prospect the railway engineer has of rising to become a chief or high executive of his line. The nature of his training and experience, and the breadth of vision they engender, fit him for such posts of responsibility, a fact that is more generally recognised on the Continent of Europe and in the British Empire outside the United Kingdom than within it. In India, for instance, it has been quite usual at any one time for the Chief Commissioner of Railways and for 80 per cent. of the chief executives of the Class 1 systems to be engineers. In the Dominions and Colonies, also, the chief administrators frequently are engineers, and in several European countries they have to be highly-qualified technical men.

As a matter of fact, in almost every country there should now be ample opportunities for engineers in the reconstruction and rehabilitation of railway plant and equipment, long overdue as a result of the slump in the 30s and the war. Railway engineering, therefore, can still offer greater scope for ability and general interest, and wider variety than other branches of the profession, together with good prospects of promotion to the highest planes in many countries, attractions that should not fail to induce the best brains among students to choose it as a career. A certain amount of propaganda on these lines, however, seems to be necessary to dissipate the prevalent idea among the young that railways are a "back number."

British and American Passenger Train Travel

IN the course of his speech on the second reading of the Transport Bill, Mr. Dalton, Chancellor of the Exchequer, asserted that our railway system was "in very poor shape. Partly, that is due to the strain of six years' war; partly, but not wholly. Those dingy railway stations, those miserable, unprepossessing restaurants, all this apparatus for sleeping and eating, make one ashamed as an Englishman when one is travelling abroad and sees how well the thing is done in Western Europe. . . . still more do we feel that if we go to America . . ." Mr. Dalton had a good deal more to say about the condition of our railways, but we will not quote further, as the object of this article is to give the facts about the development of passenger train travel in this country and the United States between two world wars.

A casual visitor to the States may be misled by favourable impressions formed on a few trips over popular routes. The crack expresses, with their elaborate equipment and numerous attendants, have an air of easy opulence about them, but are by no means typical of the train services throughout the country. To begin with, 61,000 of the 227,000 route-miles in America are not open for passenger working, and carry freight only. In the year 1938 the number of passengers carried over the remaining 161,000 route-miles was 453,000,000, or about 2,800 a mile. In the year 1921 the number of passengers was 1,035,000,000, so that between the wars bookings declined by 56 per cent., though the average fare was reduced from 3 cents to less than 2 cents a mile.

Over the same period, passenger train-mileage was cut by 29 per cent. from 560,000,000 to 394,000,000, and passenger revenue declined from \$1,154 million to \$406 million, or by 64 per cent. As a result of the persistent downward trend, the Interstate Commerce Commission estimates that the U.S.A. railways had a deficit on their passenger operations of \$255 million in 1938. In other words, the passenger service was provided at the expense of freight service, which produced a net railway operating income of \$626 million. This state of affairs continued year by year until 1942, when war conditions doubled passenger revenue.

There has been no such catastrophic falling off in passenger carryings or earnings on the British main-line railways. In 1938 the number of originating journeys was 1,158,109,000, representing 60,600 journeys per route-mile—21 times the American figure. In 1923 the number of journeys was 1,319,000,000. There was thus a decline of 12 per cent. during the 15 years after amalgamation. Receipts from passengers carried fell in the higher ratio of 18 per cent. from £69 million to £56.5 million, mainly as a result of the growing issue of

monthly return, week-end, and excursion tickets at prices below the full fares.

The 1938 performance of the Southern Railway was noteworthy, because 358,410,000 passengers started their journeys on its line, or 166,240 per route-mile. We know of no other railway with such a high average density of passenger movement spread over 2,156 miles of line. The enterprise of the Southern in handling this exceptional volume of traffic efficiently, earned receipts of £14,700,000, only £100,000 less than its 1923 revenue from passengers carried.

The results quoted above show conclusively that the British railways kept a better hold on their passenger business between the wars than did the American railways. Yet our railways operated from 1924 onwards through a serious set-back to trade and industry, whereas America basked in prosperity until October, 1929. It stands to reason that our four main lines could not have maintained their passenger carryings to a satisfactory extent if their permanent way and rolling stock had not been in good order; they also improved their services by increasing their train-mileage considerably. Many of the new trains installed between the wars were amongst the finest in the world, and, in particular, the sleeping cars on the east and west coast routes to Scotland furnished better accommodation than the majority of the Pullman cars running in the States.

The American railways are worried about the state of their passenger equipment. Almost half of the total number of passenger coaches in service today are 30 years old, dating back before the first world war. A keen critic, Mr. R. R. Young, Chairman of the Chesapeake & Ohio, suggests that the railways have "tried to squeeze the last dollar out of obsolete equipment," and claims credit for the belated institution of coast-to-coast through passenger services by way of Chicago and St. Louis, as well as for eliminating a "vast black market in train place reservations."

To sum up, the American railways are ahead of ours in some respects—especially in train speeds and in the use of diesel-electric motive power, which is suited to their long point-to-point runs. Yet in peacetime, railways played a comparatively small part in the life of the States as passenger carriers. That is a surprising fact about a country twenty times the size of Great Britain, with 140 millions of prosperous and somewhat restless inhabitants. Conditions in our land are altogether different. An efficient and in many areas an intensive railway passenger service is essential for our daily business. At present, scarcity of manpower, locomotives, coaching stock, and coal of proper quality prevent our railways from meeting public requirements as they would wish to do, but the facts and figures given above prove conclusively that the Chancellor of the Exchequer's remarks were as illfounded as they were ungenerous.

Pioneer Oil-Burning Locomotives in the U.S.A.

THE pioneer claim of the Atchison, Topeka & Santa Fe Railroad in the adoption of oil firing on steam locomotives, to which we made reference in our November 29 issue, page 598, is not accepted by some of the other important American railways. As with many other matters, there seems to be doubt as to what should be regarded as experiment, and what successful application. The Central Pacific, later absorbed by the Southern Pacific, made attempts as early as 1879 to substitute oil for coal, but apparently failed to achieve success. In 1885, after learning of the efforts of the Egyptian State Railways to use oil instead of coal, the Southern Pacific made further experiments, this time with its ferries and river steamers, and with stationary boilers in the shops. One locomotive also was equipped, but did not steam well, and the experiments were suspended. In 1887, the Pennsylvania Railroad tried out oil burning on a number of locomotives, but found that oil was 50 per cent. more expensive than coal, and the American railways then decided generally that oil burning was uneconomic, and continued to burn either coal or wood.

The Union Oil Company in 1894 became interested in finding markets for its ever-increasing supply of crude oil, and expended a considerable amount of money on research work with the object of developing apparatus for burning this oil in locomotives, and thus securing an immediate sale for its enormous surplus of crude oil. There seems little doubt that

the first U.S.A. locomotive to use oil fuel successfully was the Baldwin-built 4-6-0 No. 10 (built in 1887) of the Southern California Railway (until 1888 known as the California Southern Railway). This engine was converted to oil firing in 1894 and started the successful application of oil fuel in the U.S.A. The Southern California later became a part of the Santa Fe system, and this is the basis of the pioneer claim. The burner was introduced by Dr. William Booth, who received a royalty for some years from the Santa Fe, but this was discontinued when the earlier Russian work, based on an English invention, became known in the U.S.A.

Oil firing was next used successfully from May, 1895, by the Southern Pacific, and in 1896 by the San Bernardino, Arrowhead & Waterman. All these railways were on the Pacific side, and obtained their coal from Australia or British Columbia at approximately \$7.50 a ton. Hence, the economic inducement to use oil was considerable. Beginning about 1902, the practice became widespread, and now has reached enormous proportions. U.S.A. locomotive oil consumption was stated to be 70,094,416 barrels a year in 1927, and 98,550,000 in 1942. Doubtless it exceeded the latter figure in the later war years, but statistics are not available.

The Scottish Railway Network

IN our issue of December 27, 1940, we reviewed a booklet by Mr. J. F. Pownall entitled "New Railway Network Principles." The author's theory was that existing lines should be linked up to form through routes over which express trains would run every hour for distances of 50 miles or thereabouts. There would thus be a series of "hour sections" between the principal stations, intermediate stations being served by stopping trains, also spaced at regular intervals. In an editorial we pointed out that the scheme took no account of traffic requirements, but added that, "with the prospect of vast changes due to destruction and to redistribution of the population which may come after the war," the scheme was worth considering.

Mr. Pownall has now published a second book* to show how the Scottish railways could be recast in order to apply his network principles. *Bradshaw* would then appear in a new guise, with timed diagrams instead of tables of train departures and arrivals. Hourly trains would speed across country and reduce journey times everywhere.

The proposition is magnificent, but is enunciated with a sublime disregard of commercial factors. It involves the construction of 375 miles of new line in the open and 45 miles in tunnel or on viaduct. Mr. Pownall does not trouble about estimates of cost. If a 3-mile tunnel between Renton and Port Glasgow, right under the Clyde, will give a new hour section of 47 miles between Greenock and Gleneagles, by way of Balfour, his view seems to be that the work should be carried out. Neither does the possible volume of traffic concern him. To get two hour sections between Forfar and Elgin, a new railway is suggested from Brechin to Alford and thence to Kennethmont. That is a difficult route through empty country, but a 4-mile tunnel is no obstacle to our planner. We are assured that "long tunnels are being made less costly by engineering advances."

When Mr. Pownall surveys the railway system in the south of Scotland, his proposals are no more feasible. He would build a new "hour station" at Holydean, near St. Boswells, with 7 long and 4 short platforms, as a gathering ground for traffic from all directions—including hourly expresses from North Queensferry, calling at Edinburgh (Morningside Station), and from Pegswood, near Morpeth, on the L.N.E.R. main line. This part of the scheme ignores the main flows of traffic, the capacity of the various routes concerned, and the huge train-mileage which would be entailed.

The book propounds further theories about goods network working, but we need hardly discuss these, as they depend on the passenger scheme being in force. We feel that Mr. Pownall would have been wise to confine his attention to the busy lines in central Scotland. If he had shown how his basic idea could be applied there with the existing railway facilities, something practical might have emerged from his study of transport north of the Border. Instead, we fear that his book will be regarded as one of the curiosities of railway literature.

* "The Scottish Railway Network," by J. F. Pownall. Published by Cottle & Company, Dale End, Birmingham. Price 8s. 6d.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

R.E. Transportation Units in Territorial Army

Cardiff, January 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The letter from the Director of Transportation, the War Office, in your issue of January 17, gives information long awaited by many of the keen young men who were in the R.E. (Transportation) units during the last war, and it is of interest to know that it is hoped to start recruitment of volunteers for service in a number of such units within the next few months.

As one who has been a member of the Supplementary Reserve of Officers since the formation of the Transportation Units in 1925, it occurs to me that in view of what is stated in the letter, the advice of some of the pre-war company commanders might be sought with advantage, for it was on them that the task of recruiting fell, and the keeping up of the strength of the units was a matter that needed constant attention, necessitating a considerable amount of their spare time.

I am sure that much useful and enlightening information on this subject could be obtained from the former company commanders, were they asked to give it, and I am certain they would be prepared to meet representatives from the War Office, whom they could probably assist from their past experience in peacetime soldiering.

Most of these officers, having "done their bit," no longer wish again to be company commanders, and will, therefore, not get in the way of the younger men; but they could doubtless help those concerned to keep clear of the many pitfalls that they discovered between 1925 and 1939.

Yours faithfully,

R. H. EDWARDS
Lt.-Colonel, some time O.C. 151 (G.W.)
Railway Construction Coy., R.E. (S.R.)

Main-Line Railway Electrification

Frogna, N.W. January 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Mails from America have been erratic of late, but oddly enough two items of news came last week to support the argument urged by a correspondent on page 94 of your January 24 issue. The Interstate Commerce Commission stated in its *Monthly Comment* for December, that the total of electrified track, operated by Class 1 railways, reached a peak of 6,855 miles in 1938. Since then the figure has gone steadily down to 6,495 miles at the close of 1945, representing a decrease of over 5 per cent. During 1945 one railway alone, the Spokane, Portland & Seattle, discontinued the electrified operation of 170 miles of track and substituted diesel-electric motive power.

The second story is to the effect that the Union Pacific Railroad ordered in December, 64 diesel-electrics, costing \$22 million. When these machines are delivered, the Union Pacific will work the whole of its lines north of Salt Lake City by diesel-electrics.

That great railway covers 9,775 miles, and is one of the

main links between the Middle West and the Pacific coast. It has tested diesel-electrics thoroughly for both passenger and freight working before deciding to eliminate steam working on a large section of its system. At the end of October, the Union Pacific had a larger net railway operating income than either the Pennsylvania or the New York Central. Apparently it pays to dieselise!

Yours faithfully,

R. BELL

Fifty Years of Rail Transport

January 20

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—With reference to your footnote to my letter of December 30 last, appearing in your issue of January 10, I agree that suitability for the higher position is more important than seniority, and that is what I intended to bring out in my previous letter.

Unfortunately, as I know to my cost, the heads of departments quite often view this matter differently. For example, my own departmental chief has quite openly informed me that in other respects I am a person fit for immediate promotion, but that preference in this matter must be based on seniority. Perhaps this policy is dictated by the higher-ups, and my chief does not wish to offend them by contesting the promotion issue, so he takes the easy way out by preserving routine advancement.

Nevertheless, staff do become lethargic in their work when it is known that special efforts are not recognised. Do the trade unions not recognise this weakness in their policy? Thank you again for your courtesy.

Yours faithfully,

"A. CLERK"

"Go Slow" Movement at Stratford

London, S.W. January 27

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The White Paper just issued by the Government tells us that "the position of Great Britain is extremely serious." The country is still running into debt abroad and needs a larger output from every worker. We have reached a stage when higher wages or shorter hours should not be arranged for the workpeople in any trade unless it is clear that improved conditions of service will result in larger production. Yet a paragraph in your January 24 issue announces that a 33½ per cent. increase on their basic rate has been granted to the L.N.E.R. workshop staff at Stratford Locomotive Depot, who for two months slowed down engine repairs. It is difficult for an outsider to see how this settlement will give the men any incentive to turn out more repaired engines per shift.

Presumably the concession to the men has been approved by the Minister of Transport and will be extended to the repair staff at other sheds throughout all the railway systems. In any case, the cost of the increase will be considerable and the public, who will have to foot the bill either as travellers or as taxpayers, are entitled to have the full facts of the case.

Yours faithfully,

ECONOMICUS

Publications Received

Soft Water for Loco. Boiler Feed. By B. D. Fox, M.I.Loco.E. London: The Locomotive Publishing Co. Ltd., 88, Horseferry Road, S.W.1. 8½ in. x 5½ in. 116 pp. and 5 folding plates. Price 10s.—This publication was highly commended at an important discussion which recently took place in London between water-treatment experts of various railways. Its title suggests that it is for locomotive men, and the author, to his credit, never strays from his one object—to assist railway staffs in assimilating the correct principles of feed-water treatment. With considerable experience in the successful application of water-softening plants to the Rhodesia Railways, he is well qualified to deal with this highly important subject, which was never more vital to the steam locomotive than it is today, when the rival claims of diesel or electric—or gas turbine—power are so loud and insistent. The amount by which locomotive availability can be increased by correct water treatment, which can practically

eliminate the waste of time caused by washing out, is amazing—sufficient to justify the view that, in effect, it gives steam locomotives a new lease of life.

The whole matter of feed-water treatment has been much misunderstood in the past, and in many cases the results hoped for did not materialise, simply because of the ignorance of those responsible for operation of the plants. Difficulties, too, in appreciating the subtleties of the pH scale tended both to scare the practical locomotive man from the subject and to encourage obscurantism on the part of some professing expert knowledge in this field. Mr. Fox's book fills a gap in the literature of the subject. Like Mr. Walter's recent paper to the Institution of Locomotive Engineers, it is essentially simple to understand and thoroughly practical in application; the whole book follows an orderly and logical arrangement—the "disorders," the remedies, and the characteristics of sundry waters.

Confusion has arisen in the past from the use of too many scales for expressing the concentration of solids in feed water;

the author prefers the French (or international) unit (or hardness due to 1 part by weight, of CaCO₃ in 100,000), and wherever possible this scale is used throughout the book. A very comprehensive list of contents is given, but unfortunately the book lacks an index, which would have improved its value considerably. The type is attractive, large, and easily readable. Tabular matter apparently has been printed from blocks prepared from typewritten originals, giving a strange effect somewhat out of place in a book of this kind. However, the contents of the book are sufficiently valuable to outweigh such peculiarities. The blow-down chart at the end should be of particular use. The book, which has a foreword by Sir Montague Eddv. C.B.E., Chairman of the Buenos Ayres Great Southern Railway and the Buenos Ayres Western Railway, could be sent to almost any part of the world where steam locomotives are in use, and be fairly certain to prove useful to the staffs responsible for feed-water treatment and boiler maintenance.

The Scrap Heap

HUMAN ACCUMULATOR

An electrical department workman in a substation received a severe electric shock and narrowly escaped electrocution. When he resumed work, his foreman came round and asked him if he had fully recovered from his accident.

"Well," answered the workman in puzzled tones, "the doctor says I'm all right, and I feel quite fit, but every time I pick up an electric bulb it lights up."

THE VICTORIAN BOOKSTALL

An exhibition of original editions of Victorian books now being held by the National Book League at 7, Albemarle Street, London, W.1, includes a reconstruction of a railway bookstall of the period, designed by Mr. Osbert Lancaster. Here the traveller of the day could regale himself with the works of Mrs. Henry Wood in the new cheap issue (price 2s. 6d.), and perhaps spare sixpence for a copy of "Alone in the Pirates' Lair," to ensure that his offspring should be seen but not heard during the journey. For the adult devotee of adventure, there was "The Log of My Leisure Hours," by "An Old Sailor," who appears from the wrapper to have employed his off-duty moments profitably in rescuing shipwrecked members of his profession.

The social lion could always refresh his stock of anecdotes from "The Railway Book of Fun," and the artisan found improving entertainment in the pages of "The British Working Man," with its cover design of a L.N.W.R. guard, resplendent with beard and bandolier. Cover artists drew inspiration from railway scenes, such as the carriage interior symbolising the "first class fare" of a Christmas annual, and the signalman at work on the cover of "Railway Stories." Modern travellers, standing undecided before a bookstall counter littered with manuals on growing vegetables and hints for poultry keepers, may well envy the choice of fiction enjoyed by their predecessors.

ALL CHANGE FOR ST. HELENA

Passenger: "Porter! Porter! There's a man in this compartment who's a raving lunatic. He's scaring my wife. Seems to think he's Napoleon."

Porter: "I'll attend to him, sir. Next station, Waterloo!"

PINEAPPLE EXPRESS

I read that a special train has conveyed a consignment of 30,000 newly imported pineapples from Plymouth to London. I cannot imagine a more glaring example of Government ineptitude and incompetence.

When factories are closing down all over the country for lack of coal, and the railways say they have not sufficient engines and trucks to convey coal from the mines to the factories, the Minister of Transport and the Food Minister can nevertheless secure a special train—for pineapples.

Who wants pineapples anyway? Why not more bananas?—Major-Gen. H. Boulton in a letter in "The Daily Telegraph."

100 YEARS AGO

From THE RAILWAY TIMES, January 30, 1847

THE RAILWAY MONTHLY MAGAZINE, for February, price One Shilling, stamped to go free by post, contains—

South-Eastern Railway.
South Wales Railway (with a Map).
Northern Counties Union (with a Map).
The Belgian Railways.
The South-Eastern Conference.
Share Tables, on a new principle.

Office, 6, Helmet-court, 339, Strand.
To be had of all Booksellers and News Agents.

ALL who pay Labour Wages, or who have to check Pay Accounts, should procure Dowell's LABOUR WAGES TABLE, showing in one view, and at a single glance, the amount due, from the rate of 6d. to 5s. 8d. per day, progressing by quarters of days, from one quarter to 18 days. Experience has convinced the compiler of the great practical utility of this table, and he can confidently urge it to the notice of Railway Companies, Contractors, Builders, Manufacturers, and all concerned in pay accounts, as aiding dispatch and accuracy, and as saving time and labour in a most important degree.

Romney: Printed and published by C. L. Jordan; London, Houlston and Stoneman; and may be had of all Booksellers.

Price, as a neat Portfolio. Half-a-Crown; in a Sheet, One Shilling.

G.W.R. SHUNTING HORSES

The G.W.R. has on its payroll 20 shunting horses, specially picked for their strength. One works at Bath passenger station; 18 in goods yards at Birkenhead, Gloucester, Hayle, Kidderminster, Shrewsbury, Stourbridge, Tipton, and Wrexham; and one on the slate quarry light railway at Corris. They are used for slight shunting movements which do not warrant the expense of providing special locomotive power. The training of these animals, which is done mainly at Hockley, takes a considerable time, for there is a knack in hauling rail vehicles. The horses are taught to exert a gradually increasing pull to set the vehicles in motion. Once they start, it is comparatively light work to keep them moving. A special harness is provided, which can be attached to the coupling hook of a wagon. A horse at one time employed at a brewery siding was not a strict teetotaler, though he was never known to be the worse for drink.

RAILWAY TRAVESTIES

As Senior Railway Transport Officer, Southern Command, for the first two years of the war, my duties brought me in close contact with all the railways through the Railway Executive Committee, but more especially with the Southern and the Great Western Railways.

Through mobilisation, Dunkirk, and the blitz, no matter how heavy the demand, nor how heavy the bombing, they never failed to "deliver the goods" on time.

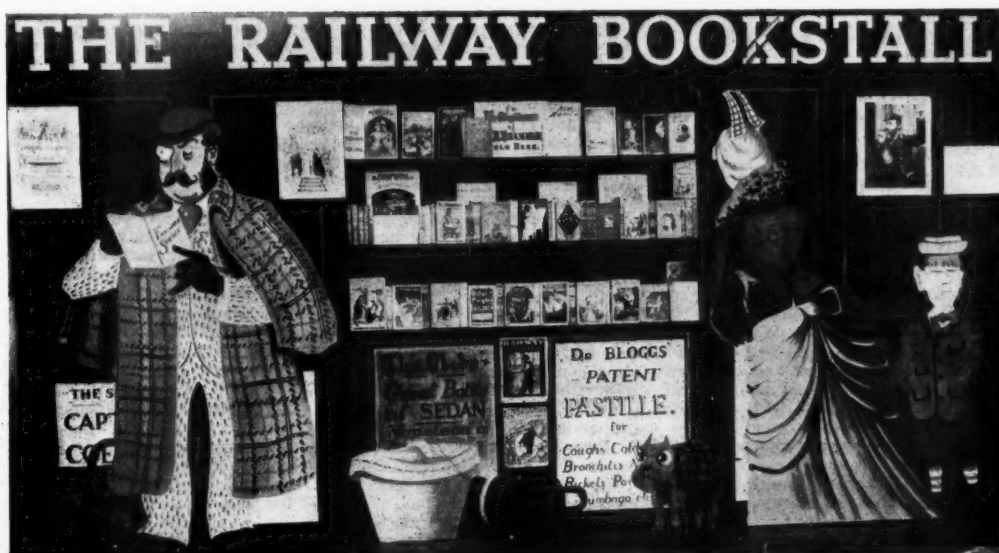
I, too, have travelled a little, and can say that the only railways in my experience which compare with our own for punctuality, comfort, and service are the British-owned and British-managed railways in Argentina.

Mr. Dalton's attack was a gross travesty of the facts, and I would suggest that he takes a little time off from his cheap-money schemes to read Kipling's poem, beginning:

"What do they know of England

Who only England know?"—Major W. Kyle Henney in a letter in "The Daily Telegraph."

A Railway Bookstall in Victorian Days



Reconstruction of a railway bookstall of 1870 at the National Book League exhibition

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Railway Facilities for Fruit Export

Every year millions of cases of citrus and deciduous fruit are despatched from Union ports to overseas countries. The development of this substantial export trade can be attributed very largely to the facilities provided by the railways to ensure that the fruit reaches its destination in the best condition. Since 1915, the railways have extended their pre-cooling plant until at the present time the stores at Cape Town, which cost £414,000, are the largest in the world. Those at Port Elizabeth have a capacity of 4,500 shipping tons, and smaller stores are available at East London and Durban. Concurrently with the expansion of pre-cooling plants at the ports, the railways developed and improved their ventilated wagons; at the present time, 2,000 such wagons are in service, together with an additional 213 refrigerator vans specially designed for South African conditions. These vans are operated to special fast schedules at appropriate seasons.

INDIA

Coal Shortage on N.W.R.

The North Western Railway recently won a battle against the coal shortage, which in the last week of December assumed crisis proportions. The position was never so serious during the war years, and although the danger point has now passed, the situation is still giving cause for concern. The winter consumption of the railway is about 5,000 tons a day, and this delivery, from the coalfields in Bengal to Ghaziabad, which acts as a receiving and distributing centre for the N.W.R., requires 250 wagons. Coal stocks are maintained in about 60 locomotive sheds in the area served by the railway. The crisis became most acute on Christmas Eve, when the average stocks dropped to 7 days, with the minimum of 2 days in certain sheds. Before the war, the railway maintained two months' supply, but this limit was lowered to 21 days during the war.

In a few places, passenger trains had to be used to distribute coal to the most badly affected sheds. Although goods traffic was restricted, the railway managed to maintain the normal passenger services, and to move essential goods, such as fuel, food, and fodder. It is hoped that by careful management, and delivery of coal by sea to Karachi, normal working will be possible before long.

WESTERN AUSTRALIA

Under-Water Storage of Coal

A large ash-lined excavation, in which 20,000 tons of Collie coal will be stored, is being constructed at West Midland at an estimated cost of £32,000. Western Australian coal mined at Collie disintegrates when exposed to the air and sun, and because of the cost involved in providing protected storage for the fuel, the department hitherto has relied on imported coal as a reserve against shortages of, and interruption in, supplies from Collie. Difficulties in obtaining adequate stocks of imported coal in recent years have demonstrated the necessity for some means of storing the local product.

Tests were made at Collie and Midland Junction of the possibilities of storing the

coal (a) blanketed with wet and dry sawdust; (b) under a continuous spray of water; and (c) completely submerged in water. The conclusion was reached that under-water storage offers the most effective method of preserving the quality of Collie coal. As a result of these tests, a scheme was prepared for under-water storage of 20,000 tons. The scheme necessitates a large unused dam at West Midland, previously a source of railway water supplies, being cleared out, lined with ash, and provided with an overhead grab transporter of 140-ft. span, with 2½ cu. yd. bucket having a capacity of 60 tons an hour; and the necessary railway sidings, electrical gear, and pumping equipment. Work on the storage construction began

\$2,100 million. More than \$900 million of the increase took place in 1946. In addition, it is estimated by the railways that operating costs in the present year will be further raised at least \$250 million because of increases that have taken place already in fuel and material prices, and because the Crosser Act, as from January 1, increases rail payroll taxes in order to provide additional benefits to employees under the broadened scope of the revised Railroad Retirement Act. Preliminary estimates indicate that freight traffic in 1947 will be on about the same level as in 1946, but passenger traffic probably will decrease substantially.

Fewer Steam Locomotives

Ownership of steam locomotives by the railways in 1946 reached its lowest point since 1900, while ownership of electric and diesel locomotives continued the upward trend of recent years. The number of

Diesel Traction on the Santa Fe



The 75,000th locomotive built by the American Locomotive Company was a 6,000-h.p. diesel, seen above in the Cajon Pass, California

during 1946 with the excavation of a large quantity of clay, and a pile bridge is being built across the dam. The storage site will be ready to receive coal at an early date.

UNITED STATES

Increased Operating Ratio

A statement authorised by the President of the Association of American Railroads shows that railways of the United States in 1946 handled the greatest volume of traffic in any peacetime year, but their net earnings were little better than those for the pre-war depression years. Because of sharply increased wage rates and prices of fuel and supplies, the ratio of expenses to revenue in 1946 exceeded 80 per cent. In the past 57 years there have been only four other years, 1918-1921, inclusive, in which such a high ratio has been experienced.

Effect of Higher Rates

The increased rates which became effective on January 1 this year (see *The Railway Gazette* of January 17) will increase rail revenues by about \$970 million annually. Since the cancelled interim rates produced about \$170 million in the last half of 1946, the net increase in freight revenues in 1947 over 1946 will approximate \$800 million, assuming the same level of traffic in the two years.

Increases in wage rates as well as higher prices of fuel, materials, and supplies since 1939 have increased rail operating expenses annually by approximately

steam locomotives owned on November 30, 1946, was 1,199 less than on December 31, 1945, but the number of electric and diesel locomotives owned increased by 405.

Railways placed in service 82 new steam locomotives in the first 11 months of 1946, contrasted with 398 new electric and diesel units. On December 1, 1946, they had 564 new locomotives on order, of which 499 were electric and diesel, and 65 were steam engines.

ITALY

Railway Plans in Northern Italy

In addition to the immediate task of rehabilitation of the Port of Genoa, the creation of a greatly enlarged port is contemplated, to serve as the commercial centre for an area including the whole of the Po Valley as well as neighbouring regions of Austria and Switzerland. For this purpose, the improvement of rail facilities would be essential, and the construction is envisaged of a new trunk line to tunnel through the Rhaetian Alps in the Splügen Pass and provide an important new link between Northern Italy, Eastern Switzerland, the Tyrol, and Bavaria. Other lines radiating from Genoa would have to be built, such as Genoa-Borgaturo-Parma, for improved connections with the Po Valley and the Brenner Line, and Genoa-Treviglio as a direct link with the proposed Splügen line. Other new construction, or realignment of existing lines, would

straighten the present railway connections between Genoa and the Simplon Tunnel route.

PALESTINE

Results of Terrorist Attacks

On November 28 last, public notices appeared on walls in Jerusalem, Haifa, and Tel Aviv to the effect that no further acts of sabotage would be perpetrated against the railways until the end of the citrus season. This lasts until approximately April, 1947. No relaxation of security precautions, however, was permitted, but no incidents on the system having occurred, normal 24-hour working was resumed on December 17, 1946. Working had been confined to daylight hours for most of the time since November 22.

It is now possible to summarise details of terrorist activities directed against the Palestine Railways during November, 1946. The figures below reflect the true seriousness of the position:—

Mines found on track and removed without damage	12
Mines found and exploded with damage to track ...	8
Trains blown up, derailed, and damaged	1
Stations blown up	2
Patrol trolleys blown up	3
Casualties : Military personnel killed	4
" " injured	6
Police " killed	1
Railway " killed	1
" " injured	1

All services were suspended from November 19 to 22. Patrol trolleys were withdrawn, in view of serious casualties, and substituted by foot patrols, and daylight-only working was instituted from the latter date. This badly restricted services. In addition to the foot patrols, armoured trolleys preceded the first train each day, and also the last train at night between Lydda and Haifa if late running necessitated this train returning after dark.

These trolleys, manned by Army personnel, were designed to instill confidence into locomotive crews, who were, very naturally, reluctant to proceed without adequate assurances of safety.

Effect on Earnings

Financially, the activities of the terrorists have affected earnings seriously. Approximate figures for the period April 1 to November 30 show the following decreases compared with 1945:—

Coaching	...	...	...	...	£P.151,472
Goods	...	...	...	...	£P.254,219

Now that confidence is restored temporarily, determined efforts are being made to make up the leeway and transport the citrus crop for export.

EGYPT

Grenades Thrown at Haifa Express

On the evening of January 5, soon after train No. 751 (Cairo—Haifa) had left Cairo, three grenades were thrown at it, inflicting injuries on 11 British soldiers. An inquiry has been opened, and a reward of £10,000 has been offered by the Egyptian Government to anyone giving information which will lead to arrests.

New Alexandria Harbour Station

As part of the scheme for improving the port of Alexandria, a passenger railway station is to be built in the vicinity of Ras-el-Tin at a cost of £600,000. The port improvements will include four new quays capable of berthing Atlantic liners.

Goods Train Boiler Explosion

At about 1 a.m. on December 17 last, after a Bulak—Gabbary perishable goods train had passed Sandanhur Station, the boiler of the engine exploded. The train continued running as far as Benha, two

miles beyond Sandanhur, where it came to rest. The driver was found lying in the six-foot way, near where the explosion occurred, and the fireman was found unconscious on the footplate. Both men died as a result of their injuries. Preliminary inquiries reveal that the explosion was due to the boiler having run short of water.

EIRE

Train Service Reductions

In connection with the reduction of train services on January 20 (see *The Railway Gazette* of January 24), the Irish Transport Company explains that, although the supply of coal is greater in quantity now than in 1939, the quality is so poor that the same steam power cannot be obtained from it. Formerly, an engine could run one mile on 42 lb. of coal, but now it takes up to 86 lb. for the same distance. There is such variation, also, in the type of coal received from day to day, that maintenance of schedules, on whatever basis they are prepared, is exceedingly difficult. The company is cutting passenger services in order to maintain the transport of essential foods, fuels, and fertilisers. The delayed sugar-beet campaign is still under way, making large demands on the company's resources; wheat, also, is being carried, and 100,000 tons of fertilisers must be delivered within two months if the 1947 crops are to be assured.

In addition to the average main-line service of one train each way on four days a week, limited third class passenger accommodation is being provided on certain perishable goods trains between Kingsbridge and Cork, and between Waterford and Limerick, with connections for Cork and Dublin at Limerick Junction.

Road and Rail Transport Costs Compared

An analysis based on experience during the recent railway strike in Western Australia

DURING the recent hold-up of rail services in Western Australia as a result of the enginemens' strike, road transport was used widely in the conveyance of passengers and essential goods, and as a result some agitation has since arisen for the removal or modification of restrictions on road services, based on the argument that road transport has proved its worth during the railway strike. Private road services in Western Australia are controlled by the Western Australian Transport Board, constituted under the State Transport Coordination Act, 1933, and operate mostly under licences issued by the board.

Commenting on the question of road versus rail, the Chairman of the Transport Board, Mr. W. H. Howard, said that during the recent transport crisis, when all State-owned railway services were suspended, it had been remarked through the Press and elsewhere that "road transport had proved itself." Those responsible failed to indicate exactly what had been proved. Nothing was proved during the strike that had not been known previously. It had been general knowledge for many years that road transport could compete successfully with railways and give better service, provided always that its operations were confined to particular classes of loading on which rail freight charges were comparatively high.

"In referring to 'better service,'" said

Mr. Howard, "I include the question of cost, which, particularly to the primary producer who must compete in world markets, is of prime importance. In this connection, an examination of the latest published railway statistics is illuminating.

"During 1945-46, the total tonnage of goods and livestock hauled was 2,727,702 tons, which, considered according to distances, represented 351,82,853 ton-miles. This loading was hauled at an average freight rate of 1.76d. per ton per mile. As against this figure, road transport charges during the recent crisis were as high as 9d. per ton per mile—more than five times the cost of rail transport.

“Whether the actual charge is more or less than 9d., an average rate of 5d. per ton per mile can be regarded as the absolute minimum at which road transport can operate, and even this figure is nearly three times the railway freight.

Additional Cost of Road Transport

" The railways during 1945-46 hauled 2,727,702 tons of freight at a total charge of £2,586,939, averaging 1.76d. per ton per mile. The cost at 5d. per ton per mile would have been £7,349,258. In other words, if road transport had been required to undertake the same work as carried out by the railways last year, the public as a whole would have been called upon to pay an additional £4,762,319 in freight charges.

Applying the 5d. freight calculation to the financial results of railway operations, the loss of £959,804 sustained during 1945-46 (after payment of interest) would have been converted into a profit of £3,802,515.

“Contributions from this profit could have been made towards loan sinking funds with the ultimate object of eliminating loan liability and interest, and improving and modernising our railway system at no additional cost to the taxpayer. As an alternative to this, the public has had the advantage of lower overall freight charges, but if it were possible for the public to bear the higher charges, it would undoubtedly be preferable to pay them to the railways than to operators of privately-owned road vehicles.

"At first sight it might appear that, by substituting road vehicles for railways, we could have saved the loss of £959,804. On the contrary, and ignoring the interest charges, the railways actually made a profit of £80,012. Therefore, the additional cost to the public for road transport, stated as £4,762,319, would in actual fact be increased by £80,012. Although the interest bill of over £1,000,000 is a very real part of railway finance, it can be ignored for the purposes of the above comparison, as it affects both sides.

"The capital to which the interest is related has been expended already over many years of railway development, and, whether the railways continue in operation or whether they be scrapped in favour of road transport, that annual interest charge of over £1,000,000 will still remain a liability of the State and must be contributed by the public."

The Royal Tour of South Africa

Itinerary of the journey through the Union by rail, road, and air

TODAY the King and Queen and the Princesses leave Waterloo at 2.40 p.m. for Portsmouth, where they will embark on H.M.S. *Vanguard* for the voyage to South Africa. The route of the tour in South Africa is shown in a map on page 131, and we reproduce below the full itinerary, with the dates and times that will be observed as far as possible. From Pretoria, the King is flying to Rhodesia, and the train will proceed meanwhile via Johannesburg to Mafeking and Bulawayo, where the King will rejoin it for the return journey:—

February

Monday	17	10 a.m.	Arrival at Cape Town
Tuesday	18		At Cape Town (Government House)
Wednesday	19		By car to Paarl, a Western Province fruit farm, and Stellenbosch
Thursday	20	9.30 a.m.	Opening of Parliament at Cape Town
		4 p.m.	Depart Cape Town by train
Saturday	22	9.30 a.m.	Arrive Worcester
		10.30 a.m.	Depart Worcester by train for destination near George. Spend night on train
Sunday	23		By car to neighbouring beauty spots. Spend night on train
Monday	24	9.30 a.m.	Arrive George by train
		11 a.m.	Depart George by train
		2.30 p.m.	Arrive Oudtshoorn
		6 p.m.	Depart Oudtshoorn by train
Tuesday	25	10.30 a.m.	Arrive Graaff Reinet
		11.30 a.m.	Depart Graaff Reinet by train
Wednesday	26	9.30 a.m.	Arrive Port Elizabeth. Spend night on train
Thursday	27		At Port Elizabeth. Spend night on train
Friday	28	11.30 a.m.	Depart Port Elizabeth by train for Alicedale Junction
		2 p.m.	Depart Alicedale by car
		3.30 p.m.	Arrive Grahams-town
		5 p.m.	Depart Grahams-town by car
		6.30 p.m.	Join train at Alicedale. Spend night on train
March			
Saturday	1	9 a.m.	Arrive Alice by train
		9.15 a.m.	Depart Alice by car for Lovedale. 10.15 a.m., Depart Lovedale by car
		10.30 a.m.	Depart Alice by train
		3.30 p.m.	Arrive East London. Spend night on train
Sunday	2		Rest at East London. Spend night on train
Monday	3		At East London. Spend night on train
Tuesday	4	2.45 p.m.	Depart East London by car
		3.30 p.m.	Arrive Kingwilliams-town
		5 p.m.	Depart Kingwilliams-town by car
		6.30 p.m.	Join train at Amabele. Spend night on train

March—contd.

Wednesday	5	10 a.m.	Arrive Umtata
		2 p.m.	Depart Umtata by train
Thursday	6	9.30 a.m.	Arrive Queenstown
		10.30 a.m.	Depart Queenstown by train
		4.30 p.m.	Arrive Aliwal North
		5.30 p.m.	Depart Aliwal North by train
Friday	7	10 a.m.	Arrive Bloemfontein. At Government House
Saturday	8	9.30 a.m.	By car to Orange Free State Game Reserve for day. Spend night at Bloemfontein
Sunday	9		Rest at Bloemfontein
		6 p.m.	Depart by train
Monday	10	9.30 a.m.	Arrive Kroonstad
		11.30 a.m.	Depart Kroonstad by train
		3 p.m.	Arrive Bethlehem
		5 p.m.	Depart Bethlehem by train
Tuesday	11	9.30 a.m.	Arrive Ladybrand
		10.30 a.m.	Depart Ladybrand by car
		11.30 a.m.	Arrive Maseru
			Spend night on train
Wednesday	12		In Basutoland
		5.30 p.m.	Depart Maseru by train
Thursday	13	10 a.m.	Arrive Harrismith
		11.30 a.m.	Depart Harrismith by train
		3 p.m.	Arrive Ladysmith
		4 p.m.	Depart Ladysmith by car for Natal National Park
Friday	14		At Natal National Park
Saturday	15		
Sunday	16		
Monday	17	4 p.m.	Depart Natal National Park by car for Ladysmith. Join train at Ladysmith
		6 p.m.	Depart Ladysmith by train
Tuesday	18	10 a.m.	Arrive Pietermaritzburg
		6 p.m.	Depart Pietermaritzburg by train
Wednesday	19	9.30 a.m.	Arrive Gingindlovu
		9.40 a.m.	Depart Gingindlovu by car
		10.30 a.m.	Arrive Eshowe
		4 p.m.	Depart Eshowe by car
		5 p.m.	Depart Gingindlovu by train
Thursday	20	10 a.m.	Arrive Durban. At King's House
Friday	21		At Durban
Saturday	22		
Sunday	23	6 p.m.	Depart Durban by train
Monday	24	10 a.m.	Arrive Vryheid
		11 a.m.	Depart Vryheid by train
		8 p.m.	Arrive at station (to be decided) between Piet Retief and Ermelo. Spend night on train
Tuesday	25		By car to Swaziland for the day. Spend night on train
Wednesday	26	9.30 a.m.	Arrive Ermelo by train
		10.30 a.m.	Depart Ermelo by train
Thursday	27	6 a.m.	Arrive Huhla Station, near Skukuza, in Game Reserve. Day free in Reserve. Spend night on train at Huhla or at Pretorius Kop
			Rest Camp

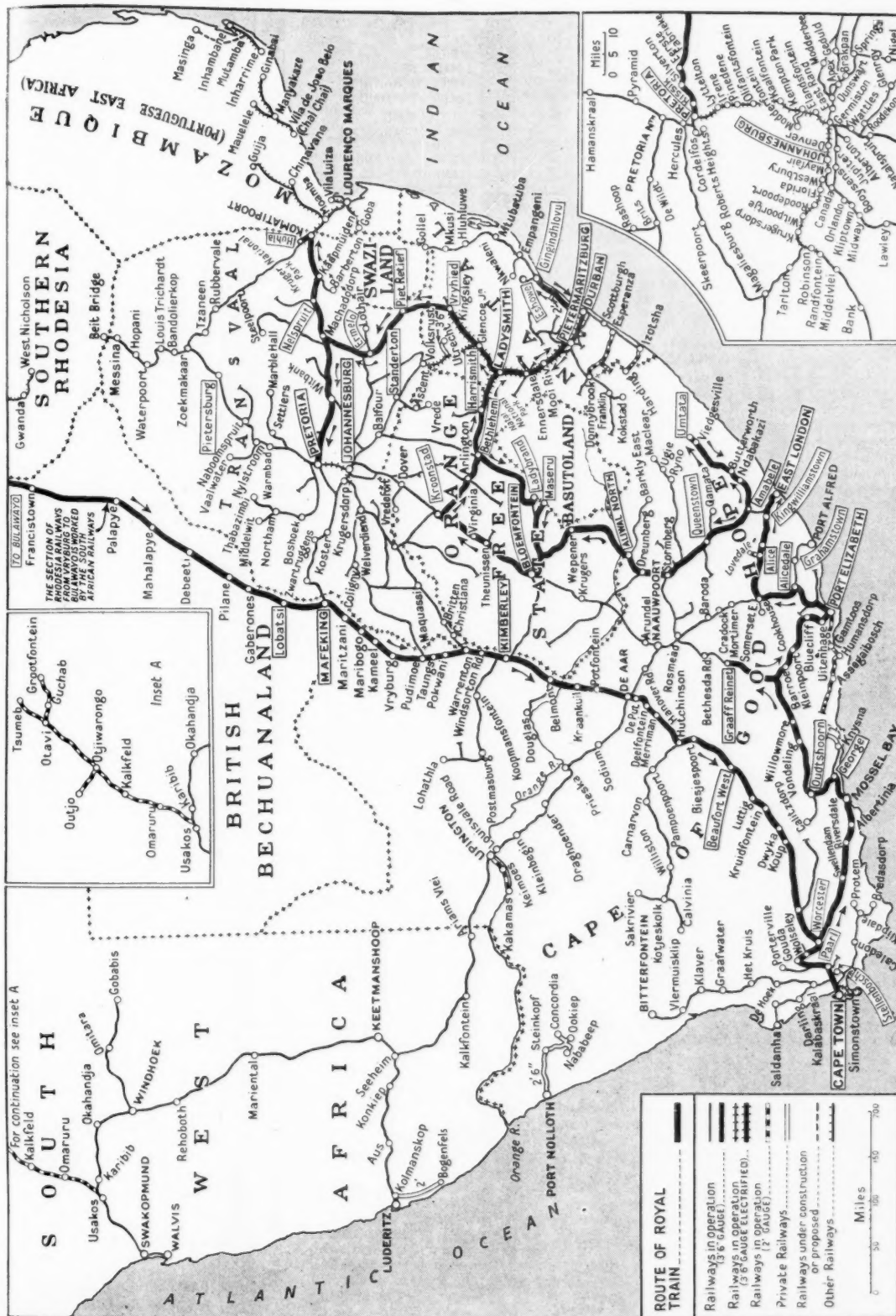
March—contd.

Friday	28		Morning free in Reserve
		3 p.m.	Depart Pretorius Kop by car for Nelspruit
		5.30 p.m.	Depart Nelspruit by train
Saturday	29	10 a.m.	Arrive Pretoria. Stay at Government House (and Libertas)
Sunday	30		At Pretoria (rest)
Monday	31		At Pretoria
April			
Tuesday	1		By car to Johannesburg for the day. Spend night at Pretoria
Wednesday	2		By car to Johannesburg for the day. Spend night at Pretoria
Thursday	3		By air to Pietersburg for the day. Spend night at Pretoria
Friday	4		At Pretoria
Saturday	5		By car to Standerton for the day. Spend night at Pretoria
Sunday	6		At Pretoria (rest)
Monday	7		By air to Rhodesia
Tuesday	8		
		till	
Tuesday	15		In Rhodesia
Wednesday	16	10 a.m.	Depart Bulawayo by train
Thursday	17	10 a.m.	Arrive Lobatsi (Bechuanaland Protectorate)
		3 p.m.	Depart Lobatsi by train
		4.30 p.m.	Arrive Mafeking
		6 p.m.	Depart Mafeking by train
Friday	18	10 a.m.	Arrive Kimberley
		4 p.m.	Depart Kimberley by train
Saturday	19	10 a.m.	Arrive Beaufort West
		10.30 a.m.	Depart Beaufort West by train
Sunday	20	10 a.m.	Arrive Cape Town. Stay at Government House
Monday	21		At Cape Town
Tuesday	22		
Wednesday	23		
Thursday	24		Depart Cape Town by sea

The times of arrival and departure shown above have been worked out as accurately as possible under indications available at present. While every effort will be made to adhere to them, it is possible that they may, for technical and other reasons, have to be revised in certain minor respects.

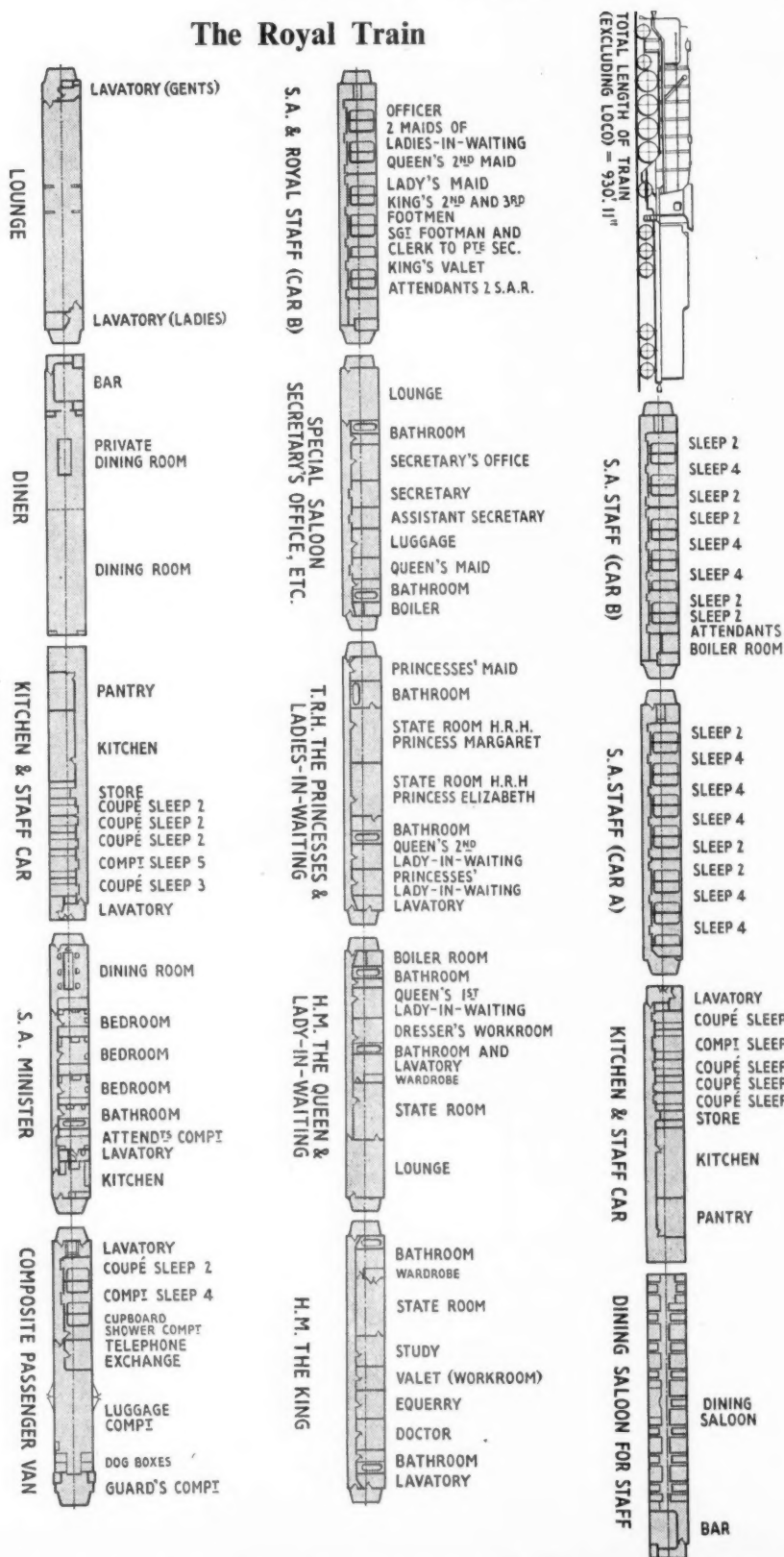
TOURIST INFORMATION CENTRE OPENED.—On January 23, Mr. H. A. Marquand, M.P., Secretary for Overseas Trade, opened the new Tourist Information Centre of the Travel Association of Great Britain & Northern Ireland, at Whitcomb Street, Leicester Square, London, W.C.2. The new centre, where, incidentally, six languages are spoken by the staff, is the successor on a more ambitious scale to the Information Bureau which the Association inaugurated in Cockspur Street before the war, and, although various pre-war fittings have been incorporated owing to the shortage of new equipment, the premises are essentially new in design and an effort of striking modernity has been obtained while exercising the utmost economy in materials used. In addition to the rooms devoted to the information service, several departments of the Association have been established in the new building, including the Honorary Overseas Membership Department.

The Royal Tour of South Africa



Map showing the route of the Royal Train in which the King and Queen and the Princesses will travel during their tour of South Africa (see article on opposite page)

The Royal Train



Outline plan showing the formation of the Royal Train which will be adopted during the tour by the Royal Family in South Africa. (For its itinerary and map of route see pages 130 and 131)

Consequences of Full Employment*

Mr. M. A. Cameron deals with this subject from the point of view of the railways

MOST economists agree today that the chief essential for maintaining full employment is to make sure that enough money is always being spent to buy the products of industry as they reach the market. A Government that understands what it is doing can ensure this by pumping more money into circulation whenever unemployment threatens to increase.

There are several methods of doing that. One method, which has the advantage of being neutral in the sense that it leaves everyone free to choose what he buys, and does not assume, as a public works policy must, that everyone wants more roads or public libraries, would be to reduce taxation by deliberately unbalancing the budget and creating new money to fill the gap. That, of course, is only when unemployment is increasing, and it is a remedy that needs to be used with care, and with willingness to apply the opposite remedy of increased taxation if there is too much money about and inflation begins to threaten. There is no technical difficulty.

Danger of Inflation

But although there is no technical difficulty, there is, and always will be, in any community that is not planned from top to bottom, a continual and inescapable danger of inflation. In other words, maintaining full employment in a country like ours means walking along the edge, not of a precipice, but of a gradually steepening slope down. Step over the edge, and you are on this slippery slope of inflation, where each step downwards makes it twice as hard to climb back.

The reason is simple enough. Full employment means having rather more jobs than people to fill them. Employers are tempted to offer more than current rates in order to fill vacant posts, and trade unions are tempted to take advantage of the market for labour to demand higher wages. Higher wages unaccompanied by greater production per man-hour mean higher costs. There is plenty to spend, and there has to be to maintain full employment, and employers with higher costs can, and probably do, raise prices. Higher prices, in turn, form the basis of fresh demands for higher wages, which again cause yet higher prices.

This can be prevented by discipline. In the past, unemployment itself has provided effective, but drastic discipline. Trade unions knew that to push wages too high would only result in their members being out of work, and employers knew that to push prices too high would only result in failure to sell their products. Strict State control offers an alternative kind of discipline not likely to be widely acceptable here.

The only other kind of discipline is self-discipline, based on understanding that money is only worth what you can buy with it; that, given full employment, the only way of achieving better living standards for all, as distinct from improving it for well-placed groups who might better their standard at the expense of others, is to produce more per man-hour; and that restrictive practices, reasonable enough when there were millions out of work, are now nothing less than sabotage.

We depend on foreign trade, where we now sell in order to buy, and although selling is easy just now, it is likely to become less so. An American slump, if one should come, would hit some export trades hard. Yet, if we can increase flexibility so that men and women can move easily and without personal hardship from one kind of employment to another, and if we can at the same time sharpen efficiency and improve quality and design, we have little to fear.

Position of the Railways

If we look back at the years between the wars, and graph railway traffic figures against employment, we find a fairly close correlation. Serious unemployment means less spending power, less ability to buy all sorts of things, including railway services.

Full employment will certainly maintain maximum spending power, and, broadly speaking, when people have money to spend, they spend it. Full employment, therefore, means that traffic of all kinds will flow readily and in quantity, passenger traffic because most people like to travel when they can afford it, and goods and mineral traffic because the industrial machine will be running at full pressure.

Traffic will only flow freely if charges are right, having regard to the service offered, and comparative service and charges by other means of transport. Because so large a proportion of their costs are fixed, railways are powerfully subject to the law of increasing returns, and the net additional cost of extra traffic conveyed on booked services which are already scheduled to run is often negligible.

Broadly speaking, average cost comes down as traffic goes up, as witness the wartime earnings of the railways, which poured net revenue into the Treasury to the tune of £62 million in 1943. Full employment, therefore, will help the railways to keep their charges lower than they could hope to do if spending power were curtailed by unemployment, and by keeping charges as low as possible, the railways will be contributing not a little towards the higher standard of living that is the real objective behind full employment.

But charges are ultimately governed by costs, and wages form a substantial proportion of costs. Wages on the railways are already about 70 per cent. over pre-war, and, even so, have hardly kept pace with wages in many other industries. Moreover, full employment will inevitably modify one non-financial attraction which has distinguished railway jobs in the past. A high proportion of those jobs were permanent, and those in them were exempted from having to pay unemployment insurance. There are to be no exemptions under the new Social Security Act, and, in any event, full employment means that those who leave one job will not find it anything like as difficult as they did between the wars to get another.

If everyone gets higher wages, prices are almost certain to rise at least enough to prevent the higher wages from buying more, and nobody is better off. The wage problem is obviously going to be difficult, and there is much to be said for the points scheme which has been suggested in several quarters, whereby wage rates in different occupations could be readily and fairly compared, for in wage rates relativity is

at least as important as is the absolute amount paid.

Railway expenditure on renewals of track and equipment adds up to many millions of pounds. In the past, this has varied from year to year, and has not always been greatest when prices were lowest, because those were the lean years. Such a step was perfectly natural, but when indulged in on a large scale, contributed not a little to making bad times worse and good times short, for the money put aside was held out of circulation at a time when greater circulation was urgently needed, and when spent in the upswing of the trade cycle was added to a circulation already expanding quite fast enough.

Expenditure on renewals at a constant rate per annum will help to steady demand in those capital goods industries whose ups and downs have heralded nearly every boom and slump, and continuously high traffic receipts will provide the wherewithal to plan renewals on a generous scale, taking account, not only of depreciation, but also of obsolescence.

We come at last to the most important head of all, efficiency, on which is going to depend the success of any full employment policy. For full employment is not an end in itself. We seek not only better standards of living, but also a fuller life, which means more leisure when we can have it without losing the amenities which we have learnt to value.

When people understand what full employment mean, they will not find it so hard to see that restrictive practices, reasonable enough when jobs were scarce, now become a public nuisance. But whole-hearted staff co-operation requires more than that kind of understanding. It requires imaginative and patient management which will strive continually to keep all staff fully in the picture. For educated men and women do not readily give of their best unless they understand fully what they are doing and why they are doing it.

Discussion

In opening the short discussion which followed the reading of the paper, the Chairman, Mr. R. A. Riddles, a Vice-President of the L.M.S.R., said that Mr. Cameron had given them much to think about. The important thing today was to get away from the money complex and get down to man-hours. At the present time cost bore very little relation to work done. It was far easier to live under discipline, which need not be State discipline, but a determination to do the best one could in whatever job had to be done.

Several speakers referred to the National Service and Education Acts and the possible consequences of those measures on industry generally. It was felt that lads of 16 to 18 years of age might not take this period seriously as they were due for military service at 18. In any case, they would represent no real contribution to the labour force until they were 19 or 20, and there was always the possibility that when they left the services they might have very different ideas about their future.

Mr. Cameron, replying, said there was no doubt that industry would be getting a new type of recruit in the future, but perhaps because of that, industry might be better able to deal with him. Possibly improved education might create a new outlook, and nationalisation a new kind of loyalty. Although compulsory military service was necessary today, such might be regarded as a temporary measure, and possibly at some future date a form of compulsory civilian service might be instituted in its place.

* Abstract of a paper by Mr. M. A. Cameron, Assistant Passenger Manager, Southern Area, L.N.E.R., to the Railway Students' Association on January 14

Railway Electrification in Great Britain*

Economic advantages of electric traction and desirability of a unified system

THE large increase in fuel costs in recent years brings the subject of railway electrification into prominence. The higher the price of coal, the better is the case for electrification. Compared with the electric generating station, the steam locomotive is an uneconomic unit. The Weir Report of 1931 outlined the need for keeping the huge railway industry up-to-date.

Railways spent considerable sums in the past on electrifying suburban lines, only to face the rise of road competition in areas thus developed. Co-ordination between road and rail should give increased service to the public and eliminate wasteful competition.

Under the Electricity Acts, the railways are to be given supplies of electricity at cost price, plus certain defined charges and allowances on transmission lines, which relieve them of extensive capital charges for such installations as generating stations. Extensive electrification will create a large demand for electricity beneficial to the Central Electricity Board and thus the whole country. The Weir Report suggested that the Board should provide the transmission lines, build and equip the sub-stations, and supply energy to the railways at the direct current busbars of the sub-stations, but that the operation of the sub-stations should be carried out by railway employees.

When the railways' own power stations become obsolete, the tendency will be for them to take electricity from the grid.

The estimated yearly coal consumption of steam locomotives is approximately 13½ million tons. In the Weir Report the total coal for railway load, if the railways were electrified, was estimated at 3.65 million tons, on the basis of consumption of 1.43 lb. per kWh. At a price of £2 5s. a ton, the yearly saving would be over £22 million. Many steam locomotives are to be converted to oil burning, but at an increase to the cost of working as—apart from capital expenditure involved—oil costs about 2½ times as much as coal.

System of Electrification

It was laid down in the Railway Electrification Order of 1932 that electrification should be carried out with d.c. at 750 volts maximum for third rail or 1,500 volts for overhead conductors. So far, there has been little electrification on the latter system—only the Manchester and Altrincham line, and the L.N.E.R. Sheffield-Manchester and Liverpool Street-Sheffield lines under conversion. On the other hand, the Southern Railway now electrically operates 1,700 track-miles on the third rail at 650 volts d.c., and the combined mileages of the London Transport, L.M.S.R. Euston-Watford, Liverpool-Southport, and Wirral, and the L.N.E.R. Tyneside lines, all on the conductor rail system, are 526.

The advantages of having one system are obvious. Maintenance of conductor rail equipment is simple compared with overhead. The difficulty of providing continuous contact at crossovers arises with third-rail, but the Southern Railway has overcome the difficulty in its latest elec-

tric locomotive. With the lower voltage, control equipment is simplified and motors are more compact and lighter. The third rail is cheaper to instal and maintain, and one gang can supervise it and the running rails.

Before extensive electrification takes place, the advantage of the 650-volt third-rail system should be considered. As regards weather conditions, there are more than 1,300 miles of third-rail electrified lines in the U.S.A., with its more severe climate. Electrification considerably increases capacity of track and terminal stations. As in America and at some London Transport stations, building over railway premises would bring revenue.

Where large numbers have to be moved in a short time, electricity far surpasses steam in efficiency and economy. For gradients and tunnels its advantages are obvious. It was found that, contrary to previous beliefs, air bombing resulted in little dislocation to electrified lines.

Rolling Stock and Locomotives

The multiple-unit saloon coach with sliding doors is probably the most satisfactory for suburban service, and the existing corridor compartment coach, hauled either by electric locomotives or motor coaches, for long-distance traffic. For heavy freight, electric locomotives can haul the existing wagons, but continuous-braked freight trains may be used eventually. For fast light freight, multiple-unit freight stock may be introduced.

The latest type of stock on the Wirral lines of the L.M.S.R. appears ideal for suburban traffic; it is all-steel and light-weight. There is also the new stock on the Southern Railway Waterloo & City line, similarly all-steel and light-weight.

Maintenance of electric locomotives takes much less time than that of steam; therefore, only half the number of electric compared with steam locomotives can operate a given service.

The trial electric locomotives of the Southern Railway have unique features. The arrangement of the electrical equipment enables 1,000-ton freight trains to be hauled at 35 m.p.h. or 425-ton passenger trains at 75 m.p.h. Control of the traction motors is dynamic instead of through the usual series resistances. Flywheels augment the store of kinetic energy which maintains the motor current during breaks in the conductor rail at crossings and crossovers.

Electrification means the increased use of automatic signalling and safety devices, such as train stops.

Financial Considerations

The Southern Railway hardly would have progressed with its electrification programme unless it was getting a good return for the expenditure. The Paulista Railway of Brazil had reduced its working costs per train-mile by 67 per cent. by electrification. For the Mersey Railway—unsuccessful as a steam line—electrification reduced the costs by 51 per cent. In 1902, with steam working, when 6,850,000 passengers were carried, the deficit was £4,068; in 1945, the estimated number of passengers was 30,330,000 and the revenue showed a surplus of £109,976 and would have been higher had it not been for Government control.

The Wirral lines were electrified in 1938, since when the increase of passengers has been over 200 per cent.

Atomic Energy

It will be long before atomic energy can drive directly ships, trains, and road vehicles, but, sooner, it may produce steam for generating electricity. Therefore, electrification should not be delayed because atomic energy may make it obsolete; the development of atomic energy may make it an even more attractive proposition.

The Weir Report assumed that the capital involved in the electrification of the railways in 15-20 years would be about £261 million. Now the figure would be between £450 and £500 million for the overhead system—less for third rail.

A carefully prepared sequence would ensure that the most remunerative lines were electrified first. Suburban and inter-urban lines would be followed by main lines with heavy traffic density and remaining lines where electrification was justified. On remote branches, steam might be retained or diesel traction adopted; in some cases road services might be substituted.

Much may be said for railway electrification in Great Britain. Many factors today make it a paying proposition. A low interest rate on the capital involved, with a reasonable price for coal, would ensure financial success. The coal saving of nearly 10 million tons would make it attractive from the national standpoint.

The Southern Railway does not appear to find difficulty in raising capital for its electrification; in 1938, its Chairman said that the policy had proved a gold mine because of the suburban development which had followed. Suburban electrification had given a return of 27 per cent. on capital expenditure; on the Brighton and Worthing lines, 22½ per cent.

Experience shows that electric services at reasonable fares are appreciated and extensively used. Whether the railways are nationalised or continue as separate entities, a bold policy of electrification will give results satisfactory both to the public and themselves.

ELECTRIC POWER SHORTAGE IN SWITZERLAND.—One of the results of the abnormally dry weather experienced in Switzerland this winter, and the consequent strain upon the hydro-electric power stations, has been the return to Switzerland of the Swiss Federal Railways Brown-Boveri gas turbine locomotive. This locomotive had been on loan to the French National Railways since October, 1945, and had been working on the Strasbourg-Basle main line. It is now running between Basle and Zurich, as one of several measures undertaken to economise electric power consumption. Another step has been the temporary abandonment of electric locomotives for shunting, their place having been taken by the steam locomotives which are kept in reserve for emergencies. On some lines, steam locomotives are being used in place of electric for hauling passenger and goods trains. The length of trains has been reduced to a minimum, and restrictions have been imposed on the operation of sports and excursion services. Heating of trains has been reduced substantially, the current used for this purpose in normal circumstances approximating to 13 per cent. of the total electric power consumption of the Swiss Federal Railways during winter.

* Abstract of an address, "Some Aspects of Railway Electrification in Great Britain," delivered by Mr. R. Varley, M.I.E.E., A.I.C.E., General Manager & Engineer, Mersey Railway, before the Mersey & North Wales Centre of the Institution of Electrical Engineers in Liverpool on October 7.

Electrification in Holland

Many services have been restored and an extensive conversion programme is being undertaken

THE Management of the Netherlands Railways has made praiseworthy efforts to restore its electrically operated services, and remarkable headway was achieved against the numerous obstacles

arising from the attacks on, and subsequent retreat of, the Germans, who inflicted great damage on every item of equipment. Fortunately, the Government was able to secure appreciable supplies of copper from

abroad, which were worked up in Holland into finished items. Considerable delay is being experienced, however, in obtaining delivery of equipment ordered from foreign manufacturers.

Electric services were restored in August, 1946, on the Utrecht—Hilversum and Amsterdam—Zaandam lines, and subsequently to Alkmaar; and between Utrecht and Amersfoort. The Haarlem—Uitgeest and Velsen—IJmuiden routes also have been re-established. The Rotterdam—Amsterdam main-line electrification was restored on November 20, 1945. On the accompanying map are shown further sections where it is intended to restore or introduce electrification in accordance with the programme below:—

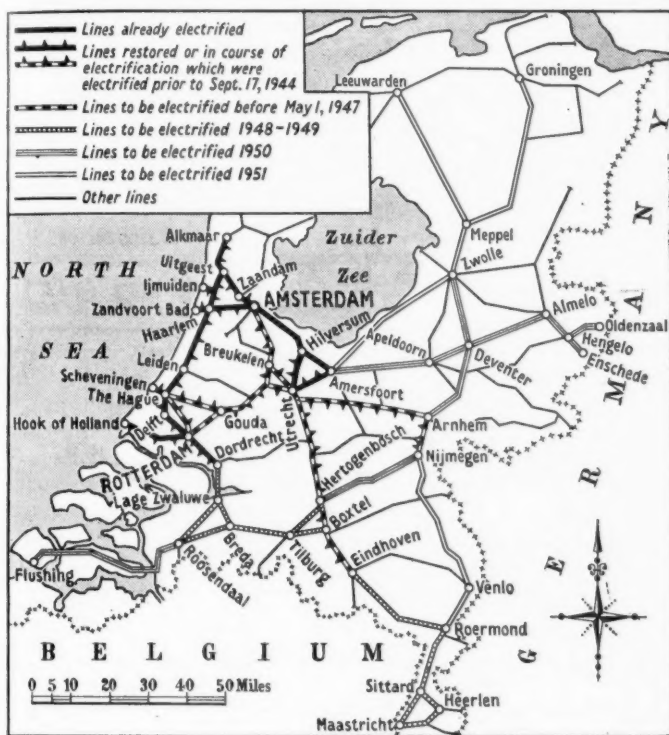
By May 1, 1947.—Utrecht—Gouda—Rotterdam—The Hague; Amsterdam—Utrecht; Utrecht—Arnhem—Nijmegen; Utrecht—Eindhoven; and Rotterdam—Leidschendam—Scheveningen

By May 1, 1949.—Dordrecht—Roosendaal; Roosendaal—Breda—Tilburg—Hertogenbosch; Lage—Zwaluwe—Breda; Tilburg—Boxtel; Eindhoven—Maastricht; Sittard—Heerlen; Maastricht—Heerlen—By May 1, 1950.—Amersfoort—Deventer—Hengelo—Oldenzaal—Enschede; Arnhem—Deventer—Zwolle; Hertogenbosch—Nijmegen; Roosendaal—Flushing

By May 1, 1951.—Amersfoort—Zwolle; Meppel—Groningen—Leeuwarden; Roermond—Nijmegen

The works to be undertaken will provide the Netherlands with a comprehensive network of electrically worked lines connecting all parts of the country. With the completion of the work scheduled for this year, electrification will have reached the stage at which it stood before the demolitions begun by the Germans on September 17, 1944, the date of the Dutch railway strike, with the addition of the electrification from Amsterdam to Hilversum and Amersfoort, which was not completed at that time.

Restorations in the immediate post-war period were recorded in our December 7, 1945, issue. On August 15, 1945, electric trains were running between Amsterdam, Haarlem, and Overveen; and on September 3 they were resumed between Rotterdam, Delft, and The Hague. Extension from The Hague to Leiden followed on September 17, and the linking up of Rotterdam—Amsterdam route, took place on November 20, 1945, as mentioned above.



Existing and projected electrification of the Netherlands Railways

An Electric Traction Jubilee

THE electric locomotives used on the City & South London Railway when it was opened in 1890, were provided with a glass plate in the floor of the cab, so that the drivers could keep an eye on sparking at the motor commutators. It was the suppression of sparking by the provision of commutating poles that made development of the d.c. traction motor a practical proposition, and in the past 25 years alone the one-hour rating of such motors has increased four times, and the continuous rating nearly six times, for the same weight. In the development of electric traction equipment, the British Thomson-Houston Co. Ltd. has played a noteworthy part since its formation 50 years ago, and the firm has marked its jubilee by publishing an illustrated survey of electric traction over the 50 years from 1896-1946, with special reference to its own contributions in this sphere.*

The fitting of B.T.H. totally-enclosed motors to the City & South London locomotives some 50 years ago was the beginning of the company's long association

with underground transport in London. Out of 3,500 motor and trailer cars now running on the London Transport system, approximately 3,000 are fitted with B.T.H. control equipment. The latest control equipment, as fitted to the London Transport 1938 tube stock, is of the electro-pneumatic cam-shaft type, in which the cam-contactor group first cuts out the starting resistances during series connection of the motors, and then, when the resistances are replaced in circuit on transfer to parallel connection, reverses its direction of rotation and again cuts out the resistance sections as it returns towards the starting position. Electro-pneumatic control gear has become a necessary feature of traction equipment with the trend towards the use of higher voltages, which has made it difficult to arrange a control supply at a suitable voltage for electro-magnetic switchgear, without putting the high tension on the train wires.

This difficulty is overcome with electro-pneumatic control, since the mechanical power is provided by air pressure, and the magnetic valves controlling the air supply are of very low power consumption, thus

enabling a voltage of 50-100 volts, such as that used for lighting, to furnish sufficient current for their operation.

The B.T.H. company supplied control equipment to the L.N.E.R. Tyneside lines, to the rolling stock on the L.M.S.R. Euston-Watford services, and to the Wirral Railway stock on its conversion to electric working in 1938. In addition to substations and track equipment, the company has supplied the Southern Railway with 87 sets of electro-pneumatic control, and 344 motors for express stock on the Brighton and Eastbourne sections. Electrified lines in Great Britain at the present time possess approximately 3,800 motor coaches, and 4,200 trailer cars, and the electrical control equipment for nearly 50 per cent. of these has been supplied by the company.

In addition to supplying equipment for the electrification of home railways, the company has participated in a number of electrification schemes overseas, notably the Melbourne suburban lines in Australia, and the Bombay suburban electrification of the Bombay, Baroda & Central India Railway. Many systems at home and overseas make use of B.T.H. substation converter, rectifier, and switchgear apparatus.

* Electric Traction Jubilee, 1896-1946. By J. H. Cansdale, M.I.E.E., A.M.I. Loco E. The British Thomson-Houston Co. Ltd., Rugby

Rebuilt "Patriot" Class Locomotives, L.M.S.R.

Power classification raised from "5X" to "6" by fitting Type "2A" taper boiler

THE L.M.S.R. "Patriot" class of 3-cylinder 4-6-0 engines, fitted with parallel boilers and bearing the power classification "5X," was classified originally as rebuilds of the 4-cylinder "Cloughton" class of the former L.N.W.R. In all, 52 of these engines were completed during the years 1930-1934, to the designs of the late Sir Henry Fowler.

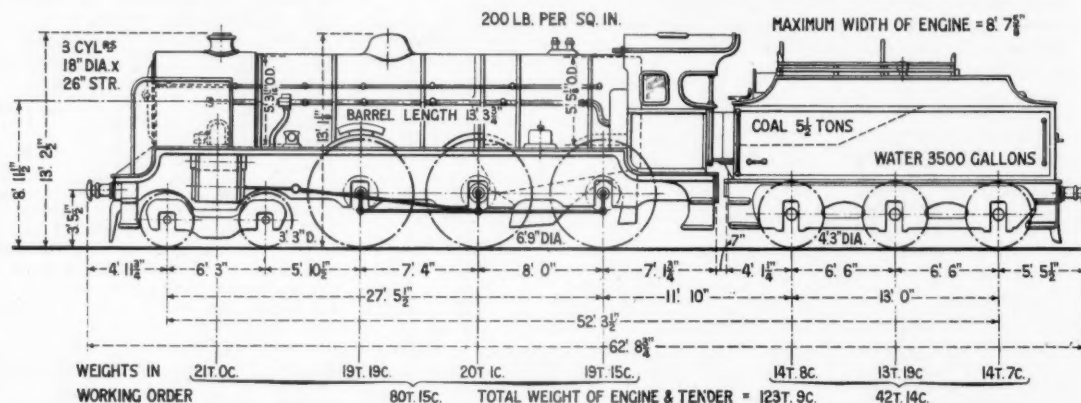
Numbers of these engines are now falling due for new boilers, and are being re-

converted "Silver Jubilee" engines, Nos. 5735-6, which were described in our November 6, 1942, issue. The whole conversion has been carried out with an increase in weight of the engine portion of only 1 ton 5 cwt., whilst the power potentialities have been increased out of all proportion to this. In accordance with the latest policy of the company, these engines are being provided with rocking grates, self-emptying ashpans, and self-cleaning

It will be seen that, by the modifications now being carried out, these powerful engines, which have rendered from 12 to 16 years of valuable service, but which are becoming obsolete in relation to more recent designs, are being thoroughly modernised and made suitable for a further period of usefulness on main-line express passenger duties.

The Taper Boiler on the "Royal Scots"

The fitting of taper boilers to the "Patriot" class locomotives is a further step in the standardisation of boilers between L.M.S.R. main-line types which began with the fitting of the "2A" boilers to the "Jubilee" engines in 1942, and to



Dimensions of "Patriot" class locomotive as originally built with parallel boiler

built to the designs of the Chief Mechanical Engineer, Mr. H. G. Ivatt, M.I.Mech.E., so as to take the type "2A" taper boiler, which has been used with conspicuous success on the "Royal Scot" conversions, as well as on two of the "Silver Jubilee" class engines. This policy is dictated also by traffic requirements, in that the re-boiling raises the engines from power classification "5X" to class "6." The conversion of 18 of the "Patriot" class engines has been authorised in the first instance, and it is intended that the work shall be completed during 1947.

The opportunity is being taken to renew various details, such as the cab, smokebox and saddle, cylinders, and the spring suspension, so that the converted engine becomes virtually identical with the two

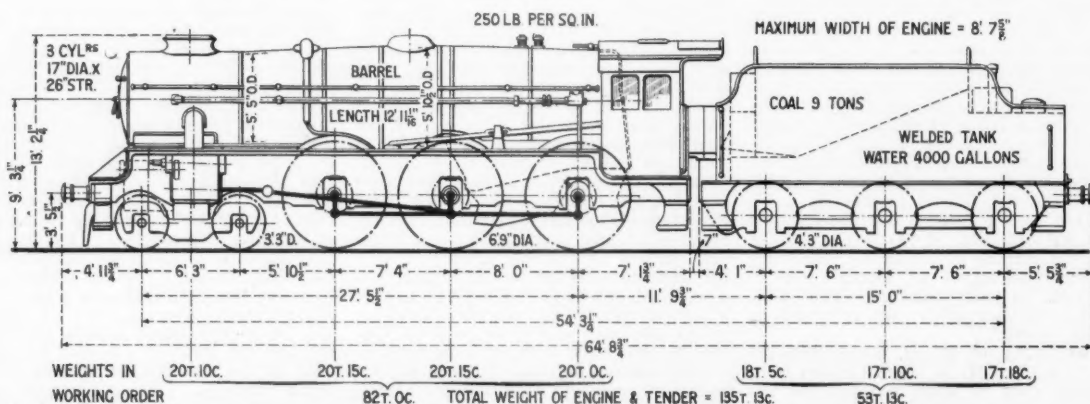
smokeboxes. Tenders of the standard 4,000-gal. type are being provided in place of the earlier pattern of 3,500-gal. capacity.

A comparison of leading particulars is given below:—

	As turned out in 1930-34	As rebuilt, 1946-47
Driving wheels, dia.	6 ft. 9 in.	6 ft. 9 in.
Cylinders (3), Dia.	18 in.	17 in.
Stroke	26 in.	26 in.
Boiler pressure	200 lb.	250 lb.
(lb. per sq. in.)		
Traction effort at 85 per cent.	26,520 lb.	29,590 lb.
Heating surface		
Firebox	183 sq. ft.	195 sq. ft.
Tubes	1,552 ..	1,667 ..
Total evaporative	1,735 ..	1,862 ..
Superheater	365 ..	348 ..
Grate area	30.5 sq. ft.	31.25 sq. ft.
Weight in working order	Tons Cwt.	Tons Cwt.
Engine	80 15	82 0
Tender	42 14	53 13
Total	123 9	135 13

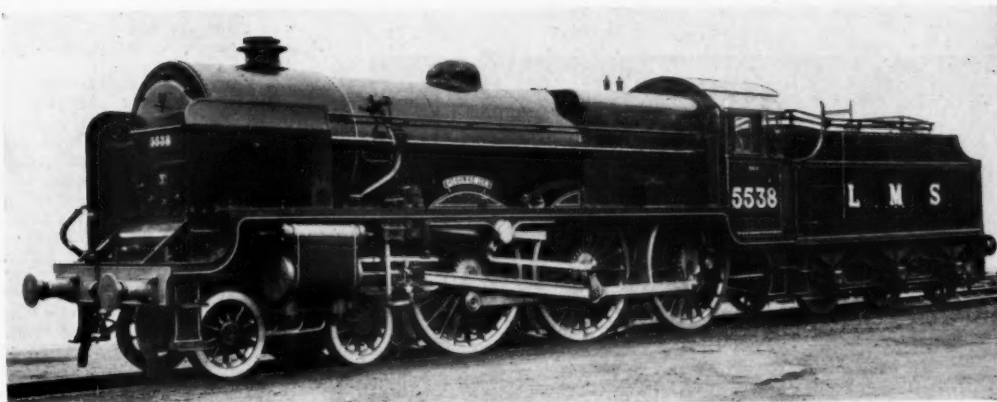
the "Royal Scot" class in 1943. A description of the converted "Royal Scots" was published in our October 8, 1943, issue, and in this instance, also, new cylinders have been fitted, and other slight modifications made in the interests of standardisation.

An example of the improved performance obtained by reboiling the "Royal Scots" was given in our December 29, 1944, issue, when we recorded a run from Leeds to Carlisle behind one of these engines on a 13-coach train weighing 410 tons gross. The engine demonstrated its capacity for making up arrears by gaining 5 min. from Leeds to Skipton, 2½ min. on to Hellfield, and all but 11 min. from Hellfield to Ais Gill, climbing from Settle Junction to Blea Moor at an average of 41.4 m.p.h.

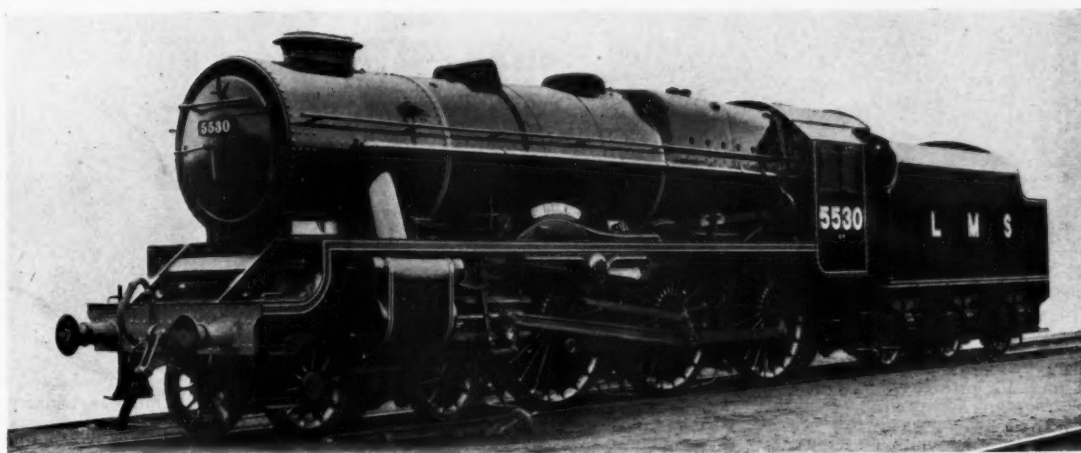


Rebuilt "Patriot" class locomotive, with taper boiler, new cylinders, and other modifications

Rebuilt "Patriot" Class Locomotives, L.M.S.R.



"Patriot" class locomotive as originally built, and classified "5 X"



A rebuilt "Patriot," with taper boiler and higher power classification

Permanent Way Institution Annual Dinner



Left to right : Mr. G. R. Strauss, Parliamentary Secretary, Ministry of Transport; Mr. J. C. L. Train, President, P.W.I.; Sir Ronald W. Matthews, Chairman, L.N.E.R.; Mr. R. A. Riddles, Vice-President, L.M.S.R.; Sir Charles H. Newton, Chief General Manager, L.N.E.R., at the P.W.I. dinner (see last week's issue)

Power-Driven Hand Tools for the Civil Engineer's Department—10*

Portable sanders and grinding machinery



Facing concrete with a 7-in. sander

PORTABLE sanders are a convenient means of applying a smooth finish to timber, concrete, brick, and other materials. The electric sander illustrated is made by Black & Decker Limited, Harmondsworth, Middlesex, and has a wide range of applications according to the type of rotating tool fitted. With either a coarse-grain disc or a cup-wire brush, it is suitable for removing paint, or de-rusting metal. A gouging planer head can be used with the sander for roughing timbers, or wooden floors can be levelled off, when some of the boards are proud, by treatment first with a flat planer head and then with a sanding disc. The same machine can be used with a cup stone for grinding welds, and for surfacing concrete where the protrusions are too heavy for the sanding disc.

Applications of Grinding Machines

The scope of portable electric grinders is very wide, for they can be used on a variety of operations where grinding, fettling, cleaning off, or wire brushing is necessary. Instead of moving heavy castings and large components to stationary grinders, work on them can be carried out on the spot. Some of the uses of such a machine are grinding flashes from raw castings, fettling, cleaning off and de-rusting, grinding the heads off rivets, smoothing irregular surfaces of metal, grinding welds, and so on.

The smaller types of Black & Decker portable grinder can be used in a tool post holder; models from the 4-in. size upwards are of full ball-bearing construction, with dust-sealed commutators and plunger-type switches for safety. Wheel guards are adjustable, handles shaped to prevent slip, and ample ventilation is provided to clear

the tool of abrasive dust and dirt. All grinders have universal motors, operating on a.c. or d.c.

Bench grinders, indispensable tools for any workshop, are put to so many uses that it may be said that a new way of making a bench grinder pay for itself is discovered every day. For tool sharpening alone, one bench grinder placed in a convenient position will save considerable time by obviating the necessity of grinding by hand or carrying tools to a more distant part of the works for sharpening. Many large fitting shops have installed several bench grinders of the type illustrated, conveniently situated so that mechanics can re-sharpen their tools and get back to their jobs without undue loss of time and the

possible disorganisation of chain production. A carrying handle enables the grinder to be moved readily to a new position when required. The machines are equally suitable for light grinding, buffing, wire brushing, and fettling, the necessary accessories being easily fitted by removing the end covers.

All models are double-ended, and fitted with safety guards and detachable end covers, yet ample room is left to adapt either wheel spindle to wire brushing or polishing. On the larger models, outlets are provided for connection to an existing exhaust system, and wheel guards are drilled and tapped to take glass eye-shields. Tool rests are part of the standard equipment, and on all but the 6-in. and 7-in. bench grinders, spark shields are fitted.

All the machines described were shown in an exhibition of power-operated hand tools arranged by the Chief Engineer's De-



Using a 5-in. portable grinder

partment of the L.N.E.R.. Among examples of hand cutting machinery exhibited by Black & Decker Limited were the Ripsnorter electric saw, and the 16-gauge Lectro-shear. The saw can be fitted with various types of blade for woodwork, or for cutting non-ferrous metal sheet and corrugated iron. The shears will tackle any flat sheet material in metal, fibre, or plastic bonded wood.



Bench-type grinding machine with 8-in. wheels

* Previous articles in this series have appeared in our issues of April 12, April 26, May 17, June 7, June 28, August 2, September 27, November 1, and December 27, 1946

RAILWAY NEWS SECTION

PERSONAL

Princess Elizabeth has been elected an Honorary Member of the Institution of Civil Engineers. She is the first lady honorary member of the Institution.

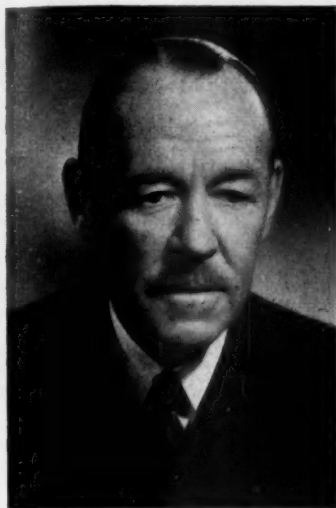
Mr. James B. Thom, M.C., B.Sc., European Traffic Manager, Canadian National Railways, who, as recorded in our January 24 issue has been appointed European Manager, was born in Montreal on February 23, 1893, and educated at Upper Canada College, Toronto, and McGill University, Montreal. In the war of 1914-18 he saw service with the Canadian Engineers in Great Britain, Belgium and France, and was awarded the Military

Mr. J. F. C. Reynolds, General Manager, South Indian Railway, has been re-elected President of the Indian Railway Conference Association for 1947-48.

Mr. W. E. C. Lazenby, who retired in 1943 from the position of Assistant Chief Officer for Labour & Establishment, L.M.S.R., has been appointed a member of the Industrial Court, representing employers.

Mr. Gilbert Szlumper, at one time General Manager of the Southern Railway, and now London Representative of the North British Locomotive Co. Ltd., has been elected Prime Warden of the Worshipful Company of Shipwrights.

Mr. J. E. M. Roberts, Assistant Divisional General Manager, North Eastern Area, L.N.E.R., who, as recorded in our January 10 issue, has been appointed Passenger Manager, North Eastern Area, entered the company's service in 1929. He obtained general experience in commercial and operating work in the Southern Area, and in 1932 joined the rates and charges staff of the Goods Manager's Office for that area; he was engaged on work in connection with the negotiation of agreed charges and the submission of evidence on early cases to the Railway Rates Tribunal, and subsequently on duties in connection with road-transport rates. From 1934 to 1938 he was concerned with matters appertaining



Mr. J. B. Thom

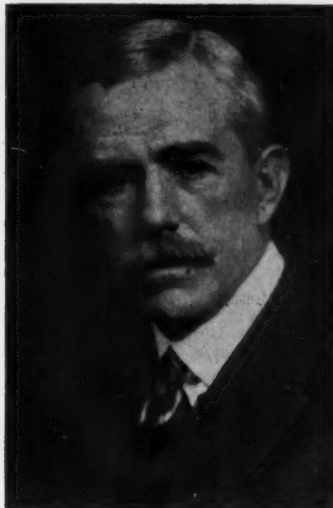
Appointed European Manager, Canadian National Railways

Cross in January, 1918. In 1919 Mr. Thom joined the Lehigh Valley Railroad as Assistant Engineer. He entered the Foreign Freight Department of the Canadian National Railways in 1924, and, after serving in various capacities, he was Assistant to the Vice-President, Traffic Department, C.N.R., Montreal, from 1936 to 1946, and came to London last August as European Traffic Manager.

We regret to record the death in Philadelphia on November 30 last, at the age of 75, of Mr. Edward G. Budd, President of the Budd Company, U.S.A., which, among many products, builds streamline, lightweight, stainless-steel railway carriages.

PRESENTATION TO MR. A. L. CASTLEMAN

Mr. A. L. Castleman, who recently retired from the position of District Goods Manager, Broad Street, L.M.S.R., has been presented with a cheque by members of the L.M.S.R. Chief Commercial Manager's and Chief Operating Manager's Conferences at a meeting of the former conference at Manchester. The presentation was made by Mr. W. P. Bradbury, Chief Commercial Manager, supported by Messrs. R. O. Banister and R. Hunter (representing Mr. S. H. Fisher, Chief Operating Manager).



Elliott

[& Fry

The late Sir Edward Midwinter

General Manager, Sudan Government Railways, 1906-25
Controller, Sudan Government London Office, 1925-32

Captain Sir Edward Colpoys Midwinter, K.B.E., C.B., C.M.G., D.S.O., whose death, at the age of 74, we recorded last week, was General Manager of the Sudan Government Railways from 1906-25, and Controller, Sudan Government London Office, from 1925-32. He was educated at St. Paul's School and at the Royal Military Academy, Woolwich. Obtaining a commission in the Royal Engineers in 1892, he served in the Nile Expedition, and was mentioned in despatches, and awarded the D.S.O., the British and Sudan Medals, and the 4th Class Medjidie. Captain Midwinter also held the rank of El Lewa Pasha in the Egyptian Army, and his decorations included the Order of the Nile (2nd Class), the Osmanieh (3rd Class) and the Egyptian Medal with two clasps. In 1906 he was appointed General Manager of the Sudan Government Railways and was largely responsible for the development of the railway and steamer systems. He was a member of the Governor-General's Council from 1913 to 1925, when he relinquished the General Managership of the Sudan Government Railways, and returned to England to become Controller of the Sudan Government London Office, a post he held until 1932. For his services in the Sudan he was made a C.M.G. in 1911, a C.B. in 1912, and was created a K.B.E. in the King's Birthday Honours, 1927.



Mr. J. E. M. Roberts

Appointed Passenger Manager, North Eastern Area, L.N.E.R.

to the company's educational scheme, staff-training arrangements, and superannuation and pension funds in the Salaried Staff Section, Chief General Manager's Office, Kings Cross; he then became Chief Staff Clerk, Divisional General Managers' Office, North Eastern Area. In May, 1939, Mr. Roberts was appointed Assistant District Superintendent, York, and in October, 1941, he was made District Superintendent, Sunderland. In September, 1943, he became District Superintendent, Darlington, and later acted as Assistant Divisional General Manager, North Eastern Area, in which post he was confirmed in May, 1946.

Dr. John Matthai is taking over the portfolio of Transport & Railways in the Indian Interim Government.

M. Jules Moch has been appointed Minister of Transport & Public Works in the new French Government.

Mr. J. N. Compton, Chief Controller-designate of Standardisation, Indian Railway Board, is at present in England.

It is reported that Ing. Ernst Kaan, General Manager of the Austrian State Railways, has resigned, and Herr Rauscher has been appointed to succeed him.



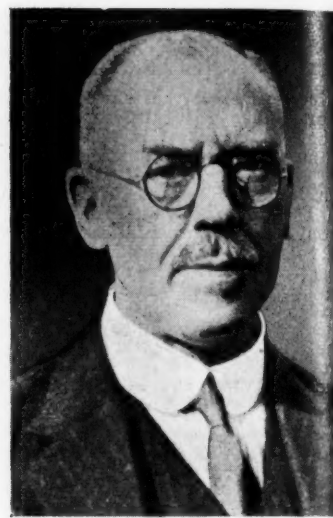
Mr. J. Davidson

Appointed District Locomotive Superintendent, St. Rollox, L.M.S.R.



Mr. T. D. Doyle

Rolling Stock Engineer, Victorian Railways Department, who has retired



Mr. S. L. Glenn

Commercial Engineer, Metropolitan-Vickers-GRS. Limited, who has retired

Mr. J. Davidson, District Locomotive Superintendent, Inverness, L.M.S.R., who, as recorded in our January 3 issue, has been appointed District Locomotive Superintendent, St. Rollox, was educated at Robert Gordons College, Aberdeen, and the Royal Technical College, Glasgow. He served his apprenticeship with the Caledonian Railway from 1916 to 1921, gaining running-shed, workshop, and drawing-office experience. In 1923 he was appointed Divisional Office Inspector, Motive Power, Glasgow, and in 1934 went to Dundee as Locomotive Foreman; in 1937 he was promoted to a similar position at Greenock, and in the next year to Hurlford. Consequent on the re-organisation of the motive-power depots of the Northern Division of the L.M.S.R., he was appointed Assistant District Loco-

motive Superintendent, St. Rollox, in 1940. Mr. Davidson became District Locomotive Superintendent, Inverness, in 1943.

Mr. Thomas D. Doyle, Rolling Stock Engineer, Victorian Railways Department, who retired recently, joined the department at the Newport Workshops, and was transferred to the rolling stock drawing office in Melbourne in 1905. There he remained for 41 years, attaining the position of Rolling Stock Engineer, which he has held for the past 20 years. Mr. Doyle has been closely associated (under the direction of four successive Chief Mechanical Engineers) with the design of all modern Victorian locomotives, carriages and wagons. He saw superheating and Walschaerts valve gear applied to the "A2"

passenger engines, also conversion of the Melbourne suburban railway system from steam to electric traction, begun in 1913 and completed in 1923. The "C" class heavy goods and "K" class light-lines goods locomotives, with their modified counterparts, and the "X" and "N" classes, designed to facilitate conversion from 5 ft. 3 in. to 4 ft. 8½ in. gauge were developed during his term in the drawing office. In 1927 Mr. Doyle was sent on a tour through the U.S.A. and Canada to obtain information on locomotive developments. While he was Rolling Stock Engineer, the "S" class 3-cylinder Pacific engine was designed, and the four locomotives built were later streamlined to haul the all-steel, streamline, air-conditioned train, "Spirit of Progress." Mr. Doyle also was closely associated with the design of the "H" 3-cylinder 4-8-4 locomotive, and saw the development of the all-welded, mass produced open goods wagon, later modified for the bulk handling of wheat.

Mr. Alfred M. Hughes has been appointed Rolling Stock Engineer, Victorian Railways Department, in succession to Mr. T. D. Doyle, who, as recorded above, has retired.

Mr. W. A. McAdam, Agent-General for British Columbia, gave a party recently at British Columbia House, London, for Mr. P. A. Clews, European Manager, Canadian National Railways, who retired on January 19. Among the guests were associates of Mr. Clews and Mr. McAdam on the Overseas Committees of the Canadian Red Cross and the Canadian Y.M.C.A., and of the Canadian Chamber of Commerce in Great Britain.

Mr. Samuel Lear Glenn, M.I.R.S.E., who, as recorded in our January 24 issue, has retired from the position of Commercial Engineer, Metropolitan - Vickers - GRS. Limited, joined Evans O'Connell & Company, founders of the well-known signalling works at Chippenham, in 1898. Shortly afterwards the British Pneumatic Railway Signal Company was formed, to which he was transferred. He was concerned in the early power-signalling installation at Grateley, brought into service in 1901, and, in collaboration with the late Mr. E. C.



A party was given recently by Mr. W. A. McAdam, Agent-General for British Columbia, for Mr. P. A. Clews, on his retirement from the position of European Manager, Canadian National Railways. Left to right: Mr. Clews; Mr. K. W. C. Grand, Assistant General Manager, Great Western Railway; and Mr. J. B. Thom, successor to Mr. Clews as European Manager, C.N.R.

Irvine, installed the first main-line track circuits and the first automatic signals in this country, between Grateley and Andover Junction, L.S.W.R. The growing use of electricity for controlling and operating signal devices, independently or in conjunction with other forces, caused the British Pneumatic Railway Signal Company to change its title to that of British Power Railway Signal Company, of which Mr. Glenn later became General Manager. He installed for the L.N.E.R. the first large panel controlled scheme, at Thirsk, when Mr. A. E. Tattersall was Signal & Telegraph Engineer for the N.E. Area of that railway. In March, 1934, Mr. Glenn joined the General Railway Signal Co. Ltd., now Metropolitan-Vickers-GRS Limited, as Commercial Engineer.

BRITISH TOURIST & HOLIDAYS BOARD

The following have accepted the invitation of the Secretary for Overseas Trade to join the board of the British Tourist & Holidays Board, under the Chairmanship of Sir Alexander Maxwell: Mr. Robin Brook (Director, Bank of England), Lord Dukes (member of the General Council, T.U.C.), Mr. M. W. Ferris (member of the Scottish Tourist Board), Lord Hacking

(Vice-President, Travel Association of Great Britain & Northern Ireland), Miss Caroline Haslett (Director, Electrical Association for Women), Mr. F. G. Hole (Chief Hotels Superintendent, L.M.S.R.), Mr. Tom Johnston (Chairman, Scottish Tourist Board), Mrs. J. Jones-Roberts (Member of Merionethshire County Council and of the North Wales Development Council), Sir Eustace Missenden (General Manager, Southern Railway), Mr. Harry Salmon (Chairman & Managing Director, J. Lyons & Co. Ltd.), Mr. E. W. Wimple (Secretary & General Manager, Workers' Travel Association Limited), Mr. Norman Wood (Director, Co-operative Wholesale Society Limited). Four committees will be appointed by the Board, of which the following members of the Board will be Chairmen: Tourist, Lord Hacking; Catering, Mr. Salmon; Home Holidays, Mr. Wimple; Hotels, Mr. Hole.

Mr. E. Bruce Ball (Managing Director, Glenfield & Kennedy Limited), Mr. C. D. H. Macartney-Filgate (Managing Director, Tubes Limited), and Mr. W. J. Ruston (Director, J. Stone & Co. Ltd.) have been elected to the governing council of the British Engineers' Association.

The Brush Electrical Engineering Co. Ltd. intends to submit a scheme to the C.I.C. shortly in connection with a complete merger with four oil engine companies whose products are sold by Associated British Oil Engines Limited. These are Mirreles, Bickerton & Day Limited, J. & H. McLaren Limited, Oil Engines (Coventry) Limited, and Petters Limited. The last-named is controlled by the Brush Electrical Engineering Co. Ltd. It is stated that, subject to the ultimate success of negotiations which are in an advanced stage, Mr. Alan P. Good, Deputy-Chairman & Managing Director of the Brush Electrical Engineering Co. Ltd., will resign from the boards of Lagonda Limited and Darwins Limited, of both of which he is Chairman. If and when that happens, Mr. Good will dispose of his controlling interest in Lagonda Limited to Dawday, Day & Co. Ltd. Mr. Good has already resigned from the boards of Tarran Industries Limited and Folland Aircraft Limited, so as to concentrate his main activities on the Brush Company. Mr. I. A. Marriott, Commercial Director of Associated British Oil Engines Limited, has joined the board of the Brush Company as a Local Director responsible for sales.

Ashford Works Visited by Minister of Transport

Southern Railway works undertakes construction of all-steel wagons for L.N.E.R.



Mr. Alfred Barnes, Minister of Transport, accompanied by the General Manager of the Southern Railway, Sir Eustace Missenden, O.B.E., visited the company's works at Ashford, Kent, on January 20. Ashford Works were first established in 1845. Today, the total staff numbers 2,289, including 2,197 men and 92 women.

The principal work in hand consists of new wagon construction, wagon repairs, and locomotive repairs. In addition, parts of new locomotives are produced, and much miscellaneous work is done for new and repaired coaching stock, and also station equipment. At the present time the works are producing, in addition to Southern Railway requirements, 1,500 16-ton all-steel wagons, with end and side doors, for the L.N.E.R. Over 600 have been completed to date.

In order to cater for this special contract, a separate shop has been allocated, measuring 320 ft. x 130 ft., in which the steel wagons for the L.N.E.R. are gradu-

ally assembled as they move around on their own wheels. The method of assembly of these wagons is a departure from that used for the usual type with steel underframes and timber bodies. The underframes are assembled on jigs, put on wheels, and moved to the body shop, where they move around whilst the steel bodies are built up in various stages. Bodies are partly riveted and partly welded.

NEW WORKSHOP EQUIPMENT

In order to provide sufficient prepared steel plates for the body construction, a battery of drilling machines was used on double shift for some months before construction began. Plates are pressed to shape in a 135-ton hydraulic press. In place of the older type of riveting machines, compressed air squeeze riveters have been brought into use. Each riveter has to maintain an output of 100 rivets an hour to fulfil the programme.

To reduce the use of oxygen bottles,

which are in short supply, liquid oxygen is now used, fed by pipeline round the various shops from a central evaporator.

Wagons of various types completed in 1946 were as follows:—

13-ton mineral for L.N.E.R.	...	90
16- " " " "	...	523
13- " open " S.R.	...	600
12- " covered " "	...	510
40- " bogie rail " "	...	11
40- " bolster " "	...	52
		1,786

An average of 175 wagons a week was repaired during the second half of 1946.

General repairs to locomotives averaged 3.8 a week, and intermediate repairs 5.4 a week. The complete manufacture was undertaken for "West Country" engines (assembled at Brighton Works) of foundation rings, and other details, including main frames and frame stretchers, and part machining of cylinders was performed. The works built 60 complete tenders for these engines.

MESSAGE FROM MINISTER OF TRANSPORT

After his visit to the works, Mr. Barnes sent to the General Manager of the Southern Railway the following message addressed to the Ashford staff:—

"Following my visit to the Ashford Works yesterday, I feel that I must convey to you my appreciation of your work. Limitations of time precluded my making a complete tour of the shops, but I saw enough to satisfy me that there is a good team spirit being directed to help the nation at this difficult period. Transport is of the utmost importance in helping towards national recovery from the impoverishing effects of the most bitter military struggle in the history of this country. Without transport, there can be no exports or supplies for the home consumer.

"The excellent work which you are doing at Ashford to help provide urgently required wagons and locomotives is very encouraging. You did not need the recent general appeal for greater efforts to be made. Workers such as you are already doing your utmost and it is by output like yours that the country will win its way back to prosperity."

(Sgd.) ALFRED BARNES

Institution of Railway Signal Engineers

"Question and answer" meeting

The Institution of Railway Signal Engineers held another "question and answer" meeting in London on November 27, when three questions were discussed. The President, Mr. H. H. Dyer, was in the chair, but vacated it in favour of Mr. H. E. Morgan, Past-President, during the discussion.

TRACK CIRCUITING

The first question asked what were the relative merits of clearance bars (manually or power operated), electrical depression bars, and track circuiting, when used for fouling protection at loop entrances and bay lines, and what different types of locking and controlling arrangements could be used.

Mr. C. G. Derbyshire gave a considered reply, analysing the features of each possible arrangement, and concluding that track circuiting was the most satisfactory solution of the problem, but that under certain circumstances depression bars could usefully be applied. He dealt with the electric locking of levers affected and the replacement of signals, considering the latter should be applied in colour-light areas or otherwise when specially called for. He was not in favour of back-locking in such cases, as being liable to interfere with other movements.

Mr. B. Wagenrieder referred to the use of trap points, the difficulties which might arise with shunting, and the possibility of providing an audible warning to show when any movement had run foul.

Mr. A. Moss spoke of the difficulties occasioned by very long wheelbases, where bars were used.

Mr. A. J. Golding, in the course of a considered reply, said that mechanical bars were satisfactory when points were within reasonable distance, but he did not favour power-worked bars. Depression bars were not suitable where speeds were high, but were valuable in certain places. If conditions warranted it, track circuiting was undoubtedly the best arrangement, but it might not always be a complete detector of the last wheel of a train. He favoured a direct lock on the point lever, and control over the point machine circuits, when one was used. In many cases it was impossible to apply back-locking.

Mr. F. Horler illustrated the application of protection to a layout and dwelt on the importance of the position of the signal box as affecting a decision on what methods to apply; and Mr. J. F. H. Tyler emphasised the difficulties met in maintaining mechanical bars in an efficient condition, and expressed the opinion that, with track circuiting available, little was to be gained by continuing to use mechanical methods; he was in favour of providing back-locking.

Mr. H. Buckland favoured separate working of clearance bars and electrical controls with depression bars.

SOLID SIGNAL WIRE

The second question referred to the use of solid in place of stranded signal wire, and Mr. R. P. Quelch, who had been on the B.S.I. Signal Wire Committee, said that single-strand wire had been introduced to get rid of breakages and reduce friction.

In some cases it made all the difference between working or not working, where long distances were concerned, but breakages had occurred just as frequently. The great difficulty lay in getting satisfactory joints and terminations.

He illustrated various methods tried in making eyes and the tests made with a snatch measuring device he had designed. The joints suffered more in single- than in double-wire operation; in the latter the movement was much smoother. The roller type joint used for telegraph wires was extremely strong, but could not be applied to steel wire. In the case of the new strand wire specification the core strand had been made slightly larger than the others, so as to cause them to lie down against it correctly.

Mr. T. Guest said that single-strand wire was lighter, but a stranded one more resilient to shock and more flexible. When a single-strand wire broke, it had a tendency to curl and might foul the track. Some used it for cross-wires, as being less liable to become frozen to the ballast or a sleeper.

Mr. E. W. Dennison referred to troubles experienced in Rhodesia with jointing the solid wires and thought stranded wire was better; and Mr. H. Buckland favoured the solid wire, as less subject to corrosion in tunnels, longer lived, and involving less friction in working.

Mr. A. E. Walker considered stranded wire better as a rule, but solid soft-iron wire useful for cross-connections. Trials with a steel strand wire with a hemp core had convinced him that such a type of core was a mistake. Mr. R. O. Yardley favoured fairly mild-steel stranded wire. Joints were a difficulty with solid wire; and there was liability of catching between wires, which made installation difficult. Mr. G. E. Gillies described methods of jointing which had proved satisfactory.

Mr. H. M. Proud, Past-President of the Institution, referred to practice on the Continent, where double-wire working was so general, as did Mr. T. S. Lascelles, who emphasised the balanced nature of the double-wire transmissions.

RETENTION OF OPEN-LINE WIRES

The third question asked whether the retention of open line wires was justified and whether it would pay to change to cables.

Mr. F. Downes, Past-President, spoke strongly in favour of adopting a plan of gradual replacement by cables, especially in certain parts of the country. At times great expense and trouble arose when bad weather brought wires down. Mr. H. J. Guthrie said that open wires had served their purpose well, but were a handicap to the provision of communications to modern standards. On some routes cabling would, he thought, be a desirable and economic proposition.

Mr. J. F. H. Tyler thought that storm damage alone would not justify the conversion, but perhaps the loss of traffic and goodwill sometimes experienced might place the question in a different light.

Mr. H. Buckland thought cabling could be usefully adopted in some areas; and Mr. F. Burton stressed the difficulties arising from the technical aspect; probably the best course would be to cable the block and signalling circuits, but retain aerial wires for main telecommunications.

The President said they had fewer faults on their open lines than anywhere, and those circuits were among the most efficient things they had. Storms were not frequent enough to justify the change.

Mr. A. Moss considered that open wires formed a definite handicap to them today.

They could not give efficient trunk-line service on lines as at present constituted, because there was none without some section of cable in it that would ruin carrier working.

He had experienced great troubles from storms, and knew of a case where the Ministry had recommended changing to cables. The question would, perhaps, solve itself in the course of time. It was largely an economic one.

The President moved a vote of thanks to Mr. Morgan.

Radio Equipment for South African Royal Train

Both the Royal Train and the pilot train which will be used during the visit of the King and Queen and the Princesses to South Africa have been equipped by Marconi's Wireless Telegraph Co. Ltd. with apparatus for broadcast reception, public address purposes, and the transmission of telephony and high-speed telegraphy.

The Royal Train itself is equipped with broadcast receivers and public address amplifiers, mounted, together with the necessary control equipment, in a single cabinet. Three receivers are provided, two of which have 30 W. amplifiers associated with them.

Broadcast reception will be carried out, normally, on two Type RR20 receivers, each feeding a Type RA102 30-W. amplifier; a third receiver, Type CR 100/2, is provided for reception in case unusually difficult conditions are experienced.

This equipment covers the short and medium wavelengths, and in the case of the CR 100/2 receiver, the wavelength coverage extends as high as 5,000 m. Provision is made for simultaneous reception of two broadcast programmes, either of which can be selected at any of the loud-speaker points throughout the Royal Train.

PILOT TRAIN EQUIPMENT

A broadcast receiving and public address installation similar to that in the Royal Train is provided also in the pilot train. In addition, the pilot train carries a Type TGS 571B telephone and high-speed telegraph transmitter of 400-500 watts output power intended for operation between 15 and 120 m.

This transmitter is controlled remotely from a separate coach, in which are installed two Marconi Type 180 Wheatstone transmitters for automatic keying of the radio transmitter at any speed between 50 and 400 words a minute. In this coach, also, are two keyboard perforators for punching telegraphic characters on the tape which is fed into the Wheatstone transmitters. The broadcast receiving equipment also is installed in this compartment, so that the pilot train contains two separate radio rooms, one for the radio transmitter itself, and the other serving as a central transmitting and receiving office.

In both trains the aerials are mounted on the roofs of the coaches, and two 30-ft. portable masts and the associated aerial system are carried for erection when the train is stationary. The Royal Train was described and illustrated fully in our November 29 issue, and a further article on the itinerary of its journey through the Union during the Royal Visit appears on page 130 this week.

Parliamentary Notes

Passenger Services in East Anglia

LT-Colonel Derek Walker-Smith (Hertford—C.), on the motion for the adjournment of the House of Commons on January 22, raised the question of the running of trains in Hertfordshire and East Anglia. He said he had had much correspondence on the matter since he had raised it in the House on November 4. The reply then given by the Minister had not been wholly satisfactory. His question had referred to travelling times and to amenities, but on this occasion he would not refer much to amenities or travelling conditions.

The Minister, in answer to the question referred to, relating to the unpunctuality of trains serving a variety of towns in Hertfordshire, had said that up to that time there had been an average of 11 to 12 minutes unpunctuality in regard to the evening trains. He did not altogether understand that, because delays were liable to be cumulative, and 11 to 12 minutes delay at Broxbourne might well become something more substantial at Bishops Stortford. Before the war the time taken on the 30-mile journey to Bishops Stortford had varied from 41 to 47 minutes. The trains to Bishops Stortford at present took at least 20 minutes longer.

Although the schedule of timings on the Kings Cross-Hertford North line was unsatisfactory, they had adhered with reasonable consistency to the timings.

LATE RUNNING

Throughout this autumn and winter the 6.30 p.m. train to Broxbourne and Bishops Stortford, and the 6 o'clock train to Hertford and the intervening stations, had been consistently and grossly irregular and unpunctual. With regard to trains to Waltham Cross, he had received a letter on November 30 stating that the average for the past week had been 30 minutes lateness for a 12½ miles journey, and that the worst case had been 75 minutes unpunctuality.

He was sure that the go-slow movement at Stratford had aggravated the difficulties of that line. It seemed sad that the dispute could not have been settled more rapidly so that the grievances of 290 fitters and mechanics would not have imposed so much hardship on the travelling public of Hertfordshire.

Conditions lately had been considerably aggravated by the cancellation of trains without notice.

Referring to the loss of man-hours, it had been computed that the 8.30 train from Bishops Stortford to Liverpool Street had lost a total of 308 man-hours in the first 16 days of the month, while the 5.24 from Liverpool Street had lost a total of 586 man-hours. That was an aggregate loss of 14 hours 48 minutes a day. Assuming some 650 people travelled on those trains, that meant approximately a total loss of man-hours of 20,000 to 30,000 a week. He protested against the continuance of such conditions or any Ministerial complacency in regard to that. He was aware that there were difficulties, and that the traffic carried from Liverpool Street was extremely heavy. He did not want to cast stones at the company, because it was in a difficult position. He knew, for example, that there had been a plan to electrify that line before the war, and as far as he knew that plan was ready to be put into operation if and when circumstances permitted. That would no doubt effect great improvement. He believed the particular quality of coal which was being serviced to those trains was extremely poor, and that some of the failures were due

to inability to get sufficient steam up. Perhaps most important of all, there was a great shortage of locomotives on the line, and perhaps on others, but he suggested to the Ministry that it was false economy to starve our home transport of locomotives at the same time as exporting locomotives on our present scale. If it considered the effect on industry of this loss of man-hours, it would realise that the provision of only a few up-to-date, good locomotives would save on that line considerable man-hours for the nation.

Captain R. J. Gunter (Essex South-East—Lab.) said he was not satisfied that all possible had been done by the L.N.E.R. in facing the problems during the past few months. While the railways had, happily, regulations for the humane loading of cattle, passengers from Liverpool Street had certainly not been so safeguarded.

"CHAOTIC OPERATION"

Operation at Liverpool Street had been so chaotic that one had been led to believe it was on the verge of collapse on certain evenings during the past few months. In spite of all the apparent difficulties on that section of the line, far more courtesy could have been shown to the travelling public.

Referring to the labour troubles, he said that, speaking as a trade unionist M.P., he did not believe that in an industrial dispute of that character capital ought to be made out of the sufferings of thousands of the travelling public. Steps should have been taken to bring some alleviation of that desperate situation in the Stratford shops. There had been public allegations of incompetence in management with regard to the operation difficulties and the Stratford labour troubles; and he felt that a considered reply ought to have been received from the L.N.E.R. some weeks ago.

There was room for improvement in the compilation of timetables. They had the spectacle of trains from Liverpool Street to Southend which might go halfway and then become non-stop. The last part of the journey was uneconomic running during this emergency since a train might then be only three-quarters full. The Minister should go fully into the question of timetables with the L.N.E.R.

Sir Henry Morris-Jones (Denbigh—Lib. Nat.) asked if it was necessary now for compartments to remain as dirty as they were today on the L.N.E.R. Was there no process by which carriages could be cleaned? He did not care whether he was passing any reflection on this or any other company. The travelling public paid big fares and was entitled to cleanliness even if it could not travel in reasonable comfort.

Major P. Asterlev Jones (Hitchin—Lab.) said that what Colonel Walker-Smith had said about the shortcomings of the Liverpool Street-Buntingford line applied, perhaps with not quite such force, to the line out of Kings Cross which ran to Hatfield, Welwyn Garden City, and on to the place now becoming known as "Silkington," and to Hitchin and further north. Part of the trouble was due to too ambitious timing of long-distance trains. The Kings Cross line had two bottle-necks between London and Hitchin: Welwyn Viaduct and the Porters Bar tunnels. Surely it would be realistic to add, say, half an hour to the timing of an express to Edinburgh so that it had time to spare if its coal was bad or its locomotive not properly maintained, rather than have this continual hold-up of 20 minutes, half an hour, and, in some cases, three-quarters of

an hour of persons who had to travel every day.

Mr. H. Channon (Southend-on-Sea—C.) asked the Minister to pay some attention to the appalling service to Southend.

Major A. L. Symonds (Cambridge—Lab.) said the trouble about the schedules between Liverpool Street and Bishops Stortford was that the L.N.E.R. seemed invariably to try to run a fast train fairly closely behind a slow train, rather than the opposite. He suggested the Minister should take up that point with the company.

Mr. C. H. Gage (Belfast South—C.) said that condition on that line had never been good, even before the war.

"SWANK" TRAINS

Mr. Evelyn Walkden (Doncaster—Lab.) said that economy could be effected in regard to some long-distance trains. For pure swank, they ran the "Yorkshire Pullman," which carried 292 people, but the ordinary citizens were not so fortunate as to get a seat on that train without booking, say, six weeks ahead. They liked those Rolls-Royce trains, but they also recognised that they could not afford them at present. When that train arrived at Doncaster, or somewhere else—Harrowgate, Hull, or Leeds—it had to have three engines to pull six coaches. He believed it had one engine for two coaches and had to have another extra engine for each additional two coaches.

Mr. J. A. Sparks (Acton—Lab.) said that nothing but the complete reorganisation of the London terminal stations could overcome the difficulties of suburban travel. Separation of long-distance from suburban services was urgently required, but it was difficult to do that at the London terminal stations. The Southern suburban service from Waterloo was really the best the City possessed. The railways had never faced the necessity for the complete reorganisation of their London terminals to cope with suburban traffic which those stations never had been designed to accommodate.

The solution was a long-term one. The real solution was the introduction of electrification to the suburban services on the L.N.E., L.M.S., and Great Western Railways to the same extent as that on the Southern suburban services. The siting of Liverpool Street was not adequate, and there was not sufficient space for expansion.

The Great Western had been the pioneer of an important safety invention, automatic train control. On the G.W.R. main line, even in thick fog when one could not see a yard, fast trains maintained their scheduled speed. On other railways the automatic train control was not in operation, and speed was bound to be reduced in bad visibility.

Mr. Ralph Assheton (City of London—C.), speaking as a Director of the L.N.E.R., said that Members interested in this section of the line were aware of the immense difficulties, increased during the last few months by the "go-slow" movement in the Stratford locomotive works. There were something like 500 engines in that area, of which over 250 were awaiting repair. He sometimes thought it a miracle that that section of the line had managed to maintain any service at all in view of the fact that half the locomotives in the area were, for whatever reason, out of action.

Throughout the whole British railway system there was a general shortage of locomotives, and he impressed on the Minister the urgent necessity of increasing the number. When they saw the large number exported they would realise how

bitter it was to all concerned in the management of the railways to know that locomotives so badly needed in this country were, for good reasons or bad, having to be sent overseas. He only hoped that payment was being received for the locomotives, and that they went to countries of whose currencies we were short; otherwise nothing could justify their export.

All connected with railways knew the immense difficulties due to the inferior quality of the coal at present being supplied. Not only was the wrong quality being supplied in many cases, but it was dirty and full of ashes and stones.

The rolling stock position on this section of the line was obviously bad, partly due to the fact that the section was to be electrified just before the war. The whole of that work had been held up, and the rolling stock, which would have been scrapped and replaced by beautiful electric cars, was therefore still in use. The permanent way was less good than it had been, due to the war. The company was doing all it could to overcome the difficulties. The situation was being improved by the settlement of the difficulties at Stratford, and by a sincere effort on behalf of all those engaged at Stratford to put their backs into the job and make up for lost time.

The long-term policy of electrification was not one which could alleviate the immediate position, but that was the solution they were working towards.

All the constructive remarks by Members who had intervened would be given the greatest attention, and would be of interest to those responsible for carrying on the difficult task of managing the L.N.E.R.

MR. STRAUSS'S REPLY

Mr. G. R. Strauss (Parliamentary Secretary to the Ministry of Transport) said there was no doubt that there were widespread and justifiable complaints about the conditions under which railway users in the east of London had to travel. He expressed admiration, having seen conditions at Liverpool Street, for the patience of the travelling public; also for the way in which the railway staffs were operating the Liverpool Street suburban lines in difficult conditions. He did not suppose it was realised that at Liverpool Street there were six lines, three in-going and three out-going; during the rush hours, between 8.30 a.m. and 9.30 a.m., 60 trains came into Liverpool Street, discharging 35,000 people. In the conditions of chaos and uncertainty during the last few weeks in particular, it had been a remarkable achievement of the staffs to operate the trains so successfully.

Liverpool Street had the most densely-operated steam-train service of any station in the world; before the war the operation in and out had been pretty well at capacity. The additional difficulties imposed by wartime factors, and the Stratford dispute, had made the subsequent dislocation particularly severe. The fundamental trouble at Liverpool Street was that the electrification of certain lines, which was to have taken place in 1940 and subsequent years, had not taken place.

ENGINES AWAITING REPAIR

The number of engines normally awaiting repair in the depots at Stratford was about 15 per cent. Recently, the number had risen to 50 per cent. The total stock of engines available was 428. The minimum required to run the services properly was 348, but the number actually avail-

able the previous day had been only 185. That had meant a large cancellation of trains. The shortage of locomotive stock had effects on every aspect of railway working. It was largely due to that, that the carriages were so dirty: to keep them in good repair and clean—they were so old that it was difficult to do it in the best circumstances—it was necessary to bring them into the depot every two or three days. When there were not the engines the carriages could not be brought in for cleaning and repairing.

SHORTER WORKING WEEK

One other factor must be borne in mind which was a difficulty affecting all forms of transport. The result of the shorter working week was a far greater concentration of travelling into a shorter period. Far more people were now travelling between 5 and 6.30 than before the war. There were 4,300 more people travelling from Liverpool Street between 4.30 and 6 now than in 1938.

With regard to the criticism that the railway was cancelling many trains at the last moment without warning, Mr. Strauss said there were always under present conditions a number of trains whose capacity to start was doubtful. In view of the shortage of trains the company did not want to cancel any train unless certain that it could not run. So if there was a doubtful starter it kept it in the schedule knowing that sometimes, at the last moment, it might have to cancel it.

The railway management had been well aware of the difficulty of giving directions to intending passengers. The existing loudspeaker system had been found to be inadequate, and there had now been installed a far better loudspeaker which, as far as he could judge, seemed to give effective notice to the public of the current situation.

ONLY SOLUTION

The only complete solution lay in the electrification of some, if not all, of the lines. There would be electrification of the Loughton line, which was the Central Line, as far as Woodford this year. Then would come the electrification of the Shenfield line. The plan was to put that into operation as soon as possible, but it could not be completed, he was informed, before two years at earliest. When that took place the number of trains able to operate on that line would be nearly double. The only other alleviation could come from an increase in the number of engines which could be made available.

He had briefly explained the technical difficulty which arose from the use on those lines of a different braking system from that on other sections, but the company was in fact supplying a limited number of extra locomotives, and planned to supply such extra ones as might become available. The company had on order 100 new engines, many of which, he understood, would be used on these lines, but it would be some time before they became available.

The Government was doing its utmost to get repairs effected to engines, and was making arrangements to have some used abroad during the war, repaired on the Continent so as to relieve the difficulties in repair shops over here.

To stop exporting engines was not quite so easy. Mr. Walkden knew the various commitments we had for the export of engines, but he could assure him the Ministry of Transport was in close touch with the Board of Trade; it was most anxious to see that not one engine was unnecessarily exported that we could usefully employ in this country.

TRANSPORT STOCK

When the House of Commons on January 21 considered on report the money resolution in connection with the Transport Bill, Sir John Mellor (Sutton Coldfield—C.) said it was important, both to the Exchequer and to the recipients, to know what sort of stock they were to get. All they knew was that the stock referred to in the resolution was intended to be stock which the Chancellor of the Exchequer expected would be redeemable within the century. It was important to the Exchequer because the rate of interest must be conditioned largely by its date of maturity, according to current market conditions; and to those who received the stock by way of compensation because, if it was a short-dated stock, they had a reasonable prospect, if they desired to realise, of being able to sell at or near par value.

If the stock was very long-dated, and if at the time they received it recipients desired to sell, and so many desired to sell that the bottom dropped out of the market, they would not in that case get anything like par value. There might well be a wave of heavy selling when this stock was issued. The House should consider whether they should more closely limit the authority to the Treasury in regard to the terms of the stock which it was proposed it should guarantee.

He felt they should inquire rather closely into what the Government understood by the guarantee by the Treasury of a stock.

Mr. Nigel Birch (Flint—C.) said that many holders of stock having lost on the average 45 per cent. of their income, would have to live on their capital. Capital value was, therefore, important, and a really long date was of no interest to them.

Mr. G. G. Drayson (Skipton—C.) asked if it would not be more simple if the persons affected were to be given the opportunity of deciding to accept 2½ per cent. Post Office Defence Bonds, encashable on six months' notice; or that they should be allowed to accept the new Savings Certificates which they could acquire at 10s.?

Mr. Glenvil Hall (Financial Secretary to the Treasury) said he had nothing to add to what the Chancellor of the Exchequer had said on December 17. This was to be a dated stock; it was to be redeemable.

He regretted he could not give the date on which the stock would be redeemed, for several reasons. First, they really did not know when it was going to be issued. It was quite likely that all the stock would not be issued at the same time. Stock in respect of the railways might be issued by the Commission on, say, January 1, 1948, and that in respect of canals and of harbours might be issued on other dates. Therefore, it was impossible for him to tell the House now what the state of the money market would be in 1948, and the conditions under which the Government would borrow money. It wanted to be fair to the taxpayer and to the people who were to get the compensation. It was fairer to do it in that way. As to the guarantee, that meant what it said—that the stock would be issued by the Transport Commission, and would have the full backing of the Government.

Mr. Birch: So had the London Transport Board, but the guarantee did not mean what it said.

Mr. Hall said he did not want to go into that because the Chancellor had dealt with it. There was obviously a difference of opinion between the Government and the Opposition as to whether faith had been broken with the stockholders of the L.P.T.B. It was the Government's empha-

tic opinion that no faith had been broken with anybody.

Replying to questions by Sir John Mellor, Mr. Hall said that the Government had no intention of defaulting on the guarantee. It could not imagine the Transport Commission going out of existence. Obviously, if it did, its place would be taken by some other national body, which would undoubtedly take on the liabilities of the Commission.

Replying to Mr. Drayson, Mr. Hall replied that this stock, unlike the Coal Board stock, could be transferred. Therefore, any individual who received his moiety or portion of the stock as issued, could immediately, if so minded, sell it on the London Stock Exchange.

The resolution was agreed to.

Transport Bill Petition

Viscount Hinchinbrooke (Dorset South—C.) on January 23 presented to the House of Commons a petition on behalf of a number of ratepayers and residents of the village of Wool, Dorset, against the nationalisation of the railways. He stated that the petition said, among other things: "The British railways under private ownership are as efficient as any others in the world." The petition asked that the Transport Bill be not proceeded with until after a public and independent inquiry. The petition concluded with the appropriate Prayer.

Southern Railway Bill

The Southern Railway Bill was presented to the House of Lords on January 23 and read for the first time.

Staff & Labour Matters

Road Haulage: Wages and Hours

When the Road Haulage Central Wages Board issued its proposals on December 31 last, rejecting a claim for a 44-hour week but proposing minor concessions on other parts of the men's claim, it was followed by an unofficial strike which began in London on January 7 and quickly spread to the provinces and to other workpeople, including market workers and dockers, until over 30,000 men were affected.

The men resumed work on January 18 after the dispute had been referred to a newly-formed Joint Industrial Council for the road haulage industry. The Council failed to reach agreement and the Minister of Labour appointed a Court of Inquiry under the Chairmanship of Lord Terrington.

The Court made its report to the Minister on January 23, and the following statement was issued by the Ministry of Labour:—

The Ministry of Labour & National Service announces that the Court of Inquiry appointed by the Minister to inquire into the differences that have arisen between the two sides of the National Joint Industrial Council for the road haulage industry on the trade union claim has today made its report to the Minister. The conclusions of the Court on the matters referred to it are summarised hereunder:—

(1) The Court has given very careful consideration to all the matters adduced in evidence before it, both for and against the claim made by the trade union side. It is, in its view, desirable, in the light of what it has heard, that the guaranteed week in the road haulage industry should be one of 44 hours, the wages for the various classifications to be the same as those now paid for 48 hours under the current Road Haulage Wages Order, and the wages for workers employed on the carriage of indivisible loads to be

those set out in R.H. (21). It is unanimously of opinion that the shorter working week, as above defined, is both practicable and equitable in the light of all the circumstances, but it appreciates that its introduction cannot be effected without some degree of preparation and re-organisation. In its view the introduction of a 44-hour guaranteed week might reasonably take place within a period ending on March 1, 1947, and it is of the opinion that its implementation on that date would be in the interests of the industry as a whole.

(2) It is also the Court's opinion that the working week should be a regulated week, made up of either 5 or 5½ days in one or other of the ways set out in the trade union claim according to the requirements of the various undertakings in the industry. It is further its view that any hours of work in excess of the normal day should not count towards the 44-hour week, but should be paid for as overtime.

(3) With regard to the claim for a longer holiday, it is the Court's opinion that the holiday proposals set out in R.H. (21) are reasonable and equitable in present circumstances.

(4) The Court thinks it should be made clear that it has reached its conclusions in the light of the evidence it has heard in regard to the road haulage industry. It has paid regard to conditions and circumstances within the industry itself and in those other industries which it serves. It welcomes the setting up of the National Joint Industrial Council as it feels convinced that it will be able to deal with the many difficult problems which will face the industry from time to time, and in particular the most economical use of the available man-power.

The National Joint Industrial Council for the Road Haulage Industry and the Road Haulage Association accepted the findings of the Court of Inquiry on January 24.

The Road Haulage Association stated that throughout the negotiation it had been actuated by a desire to do nothing which would prejudice the industrial recovery of the country. It had hesitated to accede to a request which would add many millions to the nation's transport bill.

WORK OF THE INSTITUTE OF TRANSPORT.—Proposing the toast of "The Institute of Transport" at the annual dinner of the Yorkshire Section of the Institute, Dr. G. H. Austin, Principal of the Leeds College of Commerce, after referring to the troublous times succeeding the war of 1914-18, in which the Institute had been founded, said it was significant that it did not owe its inception to any concerted desire to promote a protection society or further sectional interests. The intentions of the founders had been to transcend immediate practical problems and the political controversies of the day and they had made it their aim to widen the boundaries of transport knowledge and to provide a common meeting ground for the theorist and the practitioner. Dr. Austin had no hesitation in saying that the Institute's work for transport education had been solid and substantial. The Institute had built up an examination system which had carried the respect of educationists and gained the confidence of the candidates. Looking to the future, Dr. Austin said that if nationalisation of transport came, the need for the Institute would remain as strong as ever. More than that, it would gain added importance from the fact that it stood aloof from politics and would continue to provide a forum—perhaps the only forum—for the discussion of vocational questions affecting the transport industry in a strictly professional atmosphere.

Standing Committee on Transport Bill

Below is a list of the members of the House of Commons Standing Committee which will consider the Transport Bill:—

Chairman: Colonel Sir Charles MacAndrew (Ayr & Bute) (Conservative)

Conservatives:

Rt. Hon. Ralph Ascheton (City of London)
Colonel A. D. Dodds-Parker (Banbury)
Lt.-Colonel Alan Gandar Dower (Penrith & Cockerham)

Rt. Hon. Sir David Maxwell Fyfe, K.C. (Liverpool, West Derby)

Colonel A. Gomme-Duncan (Perth)

Brigadier O. L. Prior-Palmer (Worthing)

Captain G. E. P. Thorneycroft (Monmouth)

Lt.-Commander Gurney Braithwaite (Hodderness)

Captain L. D. Gammans (Hornsey)

Mr. C. W. H. Glossop (Howdenshire)

Colonel J. R. H. Hutchison (Glasgow Central)

Lt.-Commander the Hon. L. W. Joynson-Hicks (Chichester)

Brigadier H. R. Mackeson (Hythe)

Colonel Oliver Poole (Oswestry)

Brigadier Sir George Harvie Watt (Richmond)

Liberals:

Mr. G. Wadsworth (Buckrose)

Lt.-Colonel F. C. Byers (Dorset, Northern)

Liberal Nationals:

The Hon. John Maclay (Montrose Burghs)

Major David Renton (Huntingdon)

Ulster Unionist:

Major S. G. Haughton (Antrim)

Independent:

Rt. Hon. Sir Arthur Salter (Oxford University)

Labour:

Flight-Lieutenant A. M. Crawley (Buckingham)

Mr. C. W. Gibson (Transport & General Workers' Union) (Kennington)

Flight-Lieutenant J. E. Haire (Wycombe)

Mr. C. L. Hale (Oldham)

Mr. D. T. Jones (signalman) (The Hartlepool)

Mr. H. M. Medland (Drake)

Major G. R. Mitchison (Kettering)

Mr. W. H. Oldfield (Gorton)

Mr. E. Popplewell (signalman) (West Newcastle-upon-Tyne)

Mr. G. H. R. Rogers (railway clerk) (North Kensington)

Mr. M. F. Titterton (Trades Union official) (South Bradford)

Rt. Hon. Alfred Barnes (Minister of Transport) (East Ham, South)

Mr. E. Davies (his father founded the Railways Nationalisation Association over 30 years ago) (Enfield)

Mr. W. Dobbie (former railway coach painter, and President, N.U.R., 1931-33) (Rotherham)

Mr. J. C. Forman (Springburn)

Mr. T. Fraser (Joint Under-Secretary of State for Scotland) (Hamilton)

Captain R. J. Gunter (railway clerk) (Essex, South East)

Mr. Glenvil Hall (Financial Secretary to the Treasury) (Colne Valley)

Mr. J. H. Hoy (Leith)

Mr. W. Keenan (former official of the Transport & General Workers' Union) (Kirkdale)

Mr. F. McLeavy (road passenger transport officer) (East Bradford)

Mr. M. K. Macmillan (Western Isles)

Mr. T. Macpherson (Regional Port Director for Scotland, 1943-45) (Romford)

Mr. W. Monslow (organising secretary of Associated Society of Locomotive Engineers & Firemen) (Barrow-in-Furness)

Mr. P. Morris (railway clerk; lately National President, Railway Clerks' Association) (West Swansea)

Mr. W. T. Proctor (railwayman) (Eccles)

Mr. A. Robens (Trades Union official) (Wansbeck)

Mr. J. J. Robertson (former member of Leith Docks Authority) (Berwick & Haddington)

Mr. G. R. Strauss (Parliamentary Secretary, Ministry of Transport) (Lambeth, North)

Notes and News

London Bus Shelter Competition.—Over 350 architects have submitted designs in the L.P.T.B. competition to find the perfect kerbside bus shelter. The result will be announced shortly. Prizes of 300 guineas and 100 guineas for the two best designs will be awarded.

Aire & Calder Navigation Charges.—The Minister of Transport on December 20, 1946, made the Aire & Calder Navigation (Increase of Charges) (Amendment No. 2) Order, 1946. Copies may be obtained from the Ministry of Transport, Berkeley Square House, London, W.1.

L.M.S.R. Glass Replacement Contract.—The L.M.S.R. announces the placing of a contract for the replacement of glass at its Carriage & Wagon Works at Derby, subsequent to the removal of blackout materials and fittings, with Synroc Products Constructions, of 9a, Trebeck Street, London, W.1.

Damage to L.M.S.R. Bridges in Scotland.—Traffic on the Coupar Angus and Blairgowrie branch line of the L.M.S.R. was suspended on January 16, when it was found that flood water had damaged the foundations of a bridge over the River Isla. A bus service was arranged to convey passengers between the terminal points of the branch. Repairs were completed on the same date to a bridge between Balquhider and Glenoglehead, which had been damaged by a landslide, necessitating suspension of traffic.

New Music Director for G.W.R.—Mr. Edric Cundell, Hon. R.A.M., F.G.S.M., Principal of the Guildhall School of Music & Drama, has been appointed Honorary Director for Music to the G.W.R. Staff Association, in succession to the late Sir Walford Davies. Mr. Cundell will be an adjudicator at the forthcoming G.W.R. Music & Drama Festival at Reading, on March 24 to 29, the first to be held since 1939. There will be 103 classes, and competitors from all parts of the system and all grades of the company's staff will take part.

Jonas Woodhead & Sons Ltd.—Profit for the year ended August 31, 1946, was £40,932, comparing with £71,214 in the preceding year. The company has transferred £30,000 to general reserve, as against £20,000 in 1944-45, and shows a credit of £42,900 for E.P.T. refund, giving a net amount available of £39,151, compared with £34,219 in the previous year. The ordinary dividend is maintained at 10 per cent., and £22,651 is carried forward as against £19,219 brought in. With a view to expanding production by the group, the directors propose increasing the capital to £450,000 by the creation of 600,000 5s. ordinary shares, and to offer them in due course to the shareholders.

Railway Drawings by Swiss Children.—By way of introduction to the centenary celebrations of the opening of the first railway in Switzerland, which will be held throughout the country this year, a travelling exhibition of railway drawings by children is to be held in 14 Swiss towns. An invitation had been extended to Swiss children by the Swiss Federal Railways to tell in drawings their impressions of railways. Some 10,000 drawings were received, and these have been sifted by a jury composed of members of the Swiss Society of Drawing Teachers. The best drawings are to be shown in the exhibition, and 10 per cent. of them will be

granted prizes. The travelling exhibition will have the official title of "La jeunesse et les Chemins de fer" (Youth and Railways).

Forth Bridge Railway.—The ordinary general meeting of the Forth Bridge Railway Company will be held at Marylebone Station, London, N.W.1, on February 11, at 11 a.m.

Oldham, Ashton-under-Lyne & Guide Bridge Junction Railway Company.—The ordinary general meeting of the Oldham, Ashton-under-Lyne & Guide Bridge Junction Railway Company will be held at Marylebone Station, London, N.W.1, on February 11, at 11 a.m.

British Aluminium Co. Ltd. Sales Division Appointments.—Mr. F. W. Osborn has been appointed Midland Branch Manager of the British Aluminium Co. Ltd., in place of Mr. C. G. Pountney, who has resigned from the staff of the company. Mr. Osborn has taken up his duties at the Midland Branch Office at Lansdowne House, 41, Water Street, Birmingham, 3 (telephone: Birmingham Central 3053).

De-icing on Bakerloo Line, London Transport.—Twenty-seven sets of de-icing baths were brought into use last week-end on the Bakerloo Line between Finchley Road and Wembley Park. The equipment consists of small baths let into the conductor rails. Anti-freeze liquid in the baths is picked up by the trains and spread in a thin film along the conductor rails, thus preventing the formation of snow and ice on the rails.

G.W.R. Train Service Suspensions.—Timetable alterations and suspensions affecting 52 G.W.R. passenger train services came into force on January 27, in order to provide additional locomotives for working freight trains, and also to conserve fuel. The only long-distance service affected by these changes is the 2.10 p.m. from Bristol to Crewe, which has been suspended. Local alterations affect principally the Swindon, Taunton, Gloucester, Worcester, Birmingham, Wolverhampton, and South Wales districts.

New Cold Store for Southampton Docks.—The Southern Railway has completed plans for a new cold store, to cost £250,000, at Southampton Docks. Preliminary work on the site has begun already. The new store will provide space for 6,000 tons of meat, fruit, and dairy produce, and will be erected on a site having improved communications compared with that of the old store, which was destroyed in 1940 by enemy action. The building will be leased by the Southern Railway to the International Cold Storage & Ice Co. Ltd., the lessee of the old store.

Argentine North Eastern Railway Co. Ltd.—At the annual general meeting of the Argentine North Eastern Railway Co. Ltd., held in London on December 9, 1946, the Chairman, Mr. B. H. Binder, said that the gross receipts were somewhat better than those of the previous year. A small increase of ps. 132,067 was shown, notwithstanding a falling off in some of the company's most important traffics, such as livestock, grain, and building materials. Working expenses showed an increase of no less than ps. 122,309, due mainly to increases in wages. The sterling equivalent of the net receipts was £256,061, a decrease of 19½ per cent. compared with the figure in the previous year. The Chairman said that the holders of the 5 per cent. "B" debenture stock and

debentures had approved an extension of the interest moratorium of this security from December 31, 1946, to December 31, 1947, and the company now was awaiting the consent of the Court to that proposition.

Craven Bros. (Manchester) Limited.—To finance the provision of additional workshops and other premises, the company is creating 200,000 5 per cent. preference £1 shares, and proposes issuing them to ordinary shareholders at 20s. 6d.

British and Irish Railway Stocks and Shares

Stocks	Highest 1946	Lowest 1946	Prices	
			Jan. 28 1947	Rise Fall
G.W.R.				
Cons. Ord.	61½	54½	58	—
5% Con. Pref.	126½	107	121½	—
5% Red. Pref. (1950) ..	106½	102½	104½	—
5% Rt. Charge	140½	122½	134½	—
5% Con. Guar.	137½	118½	132½	—
4% Deb.	129½	106	123½	+ 1
4½% Deb.	129½	107	123½	—
4½% Deb.	130½	114	125½	—
5% Deb.	142½	125	136½	—
2½% Deb.	95½	81½	92½	—
L.M.S.R.				
Ord.	30½	26½	29½	—
4% Pref. (1923)	64	52½	61½	—
4% Pref.	86	75½	82½	—
5% Red. Pref. (1955) ..	105½	97	102½	—
4% Guar.	108½	100	104½	—
4% Deb.	120	103	113½	—
5% Red. Deb. (1952) ..	108½	105½	105½	—
L.N.E.R.				
5% Pref. Ord.	7	5	6½	—
Def. Ord.	3½	2½	3½	—
4% First Pref.	59½	50½	56½	—
4% Second Pref.	29½	25½	28½	—
5% Red. Pref. (1955) ..	104	97	100½	—
4% First Guar.	107	98	103½	—
4% Second Guar.	101	90	97½	—
3% Deb.	104	87½	99½	—
4% Deb.	119½	102½	113½	—
5% Red. Deb. (1947) ..	101	99	99½	—
4½% Sinking Fund Red. Deb.	107½	101½	102½	—
SOUTHERN				
Pref. Ord.	79½	70	76	—
Def. Ord.	24	19½	23½	—
5% Pref.	125½	107	120½	—
5% Red. Pref. (1964) ..	115½	106½	112½	—
5% Guar. Pref.	137½	119	132½	—
5% Red. Guar. Pref. (1957)	115½	107½	112½	—
4% Deb.	129½	105½	123½	+ 1
5% Deb.	159½	125½	134½	—
4% Red. Deb. (1962- 67)	113½	104½	109½	—
4% Red. Deb. (1970- 80)	115½	104½	111½	—
FORTH BRIDGE				
4% Deb.	109	103	104½	—
4% Guar.	105	102	101	—
L.P.T.B.				
4½% "A"	133½	120½	127½	—
5% "A"	142½	130½	136½	—
3% Guar. (1967-72) ..	108	98	103½	—
5% "B"	128½	117½	123½	—
"C"	64½	56½	63½	—
MERSEY				
Ord.	34	30	34	—
3% Perp. Pref.	76	69	73½	—
4% Perp. Deb.	117½	103	111½	—
3% Perp. Deb.	98	81	92½	—
IRELAND*				
BELFAST & C.D.				
Ord.	8½	6	7½	—
G. NORTHERN				
Ord.	41½	31½	39½	+ 1½
Pref.	63½	52	62½	—
Guar.	97½	75½	96	—
Deb.	107	97½	106	—
IRISH TRANSPORT				
Common	19/2½	16/9	17/9	—
3% Deb.	107	100	105½	—

* Latest available quotation

OFFICIAL NOTICES

SECTIONED PERSPECTIVE VIEW OF LOCOMOTIVE FRONT END. A notable drawing of L.M.S.R. class "7P" 4-6-2 locomotive of the latest type. Reprinted from *The Railway Gazette*, June 15, 1945. Price 2s. 6d. Post free 2s. 8d.

TANK LOCOMOTIVES. 0-6-0, 4 ft. 8½ in. track gauge, cylinders 16 in. x 24 in., tractive effort 21,600 lb., service weight 44 tons 13 cwt. First class condition, for sale.—Apply M.E. ENGINEERING LIMITED, 457, Finchley Road, London, N.W.3. Telephone: Hampstead 7481 (3 lines).

THE RAILWAY SYSTEM OF JAMAICA. A general description of the system and its traffic, with an account of economic problems; the motive power used; and some features of operation. By H. R. Fox, B.Sc., M.Inst.C.E., General Manager, Jamaica Government Railway. Reprinted from *The Railway Gazette*, January 5 and 12, 1945. Price 1s. Post free 1s. 2d.

BRITISH WORK ON PERSIAN RAILWAYS. The achievements and difficulties of the R.E.s. during the 15 months in which they laid the foundation for effective aid to Russia. Reprinted from *The Railway Gazette*, February 2 and 16, 1945. Price 1s. Post free 1s. 2d.

STATION DESIGN. A striking example of modern British practice at the important wayside station of Luton. Reprinted from *The Railway Gazette*, July 7, 1944. Price 1s. Post free 1s. 2d.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiment. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2s. Post free 2s. 5d.

each, in the ratio of one for six held. The company's objects are being altered so as to empower the directors to invest surplus funds, hold shares in other companies, and work through subsidiaries.

Institute of Transport.—At the Institute of Transport luncheon to be held on February 4 at 12.45 for 1.15 p.m. at the Connaught Rooms, Great Queen Street, London, W.C.2, the speaker will be Lord Brabazon of Tara, M.C. At a meeting of the Midland Section of the Institute on the same day at 6.30 p.m. at the Imperial Hotel, Birmingham, a paper on "Limiting Factors in Co-ordination" will be given by Mr. C. F. Klapper, A.M.Inst.T.

W. H. Smith & Son Luncheon to London Stationmasters and Parcels Agents.—Recently at the Connaught Rooms stationmasters and parcels agents of London terminal stations were entertained by W. H. Smith & Son Ltd. to an informal luncheon, in recognition of the cordial relations which have existed for so long between that firm and the railway companies. The Hon. D. J. Smith, a Director of W. H. Smith & Son Ltd., was in the chair, and the guests included:—

Great Western Railway: Messrs. J. R. C. Williams, retired Stationmaster, Paddington; B. A. Wright, Parcels Agent, Paddington; L.M.S.R.: Messrs. F. G. Hewitt, Stationmaster, St. Pancras; T. H. Lismer, Parcels Agent, Euston; H. S. Turrell, Stationmaster, Euston; L.N.E.R.: Messrs. G. M. Booth, Stationmaster, Liverpool Street; W. W. Capon, Stationmaster, Marylebone; F. M. Gesson, Parcels Agent, Liverpool Street;

F. W. Goring, Stationmaster, Kings Cross; H. P. Morley, Parcels Agent, Kings Cross; Southern Railway: Messrs. F. Bassett, Stationmaster, London Bridge; A. T. Chapman, Stationmaster, Victoria; C. Cunningham, Parcels Agent, Waterloo; W. G. K. Doorne, Stationmaster, Charing Cross; H. C. Greenfield, retired Stationmaster, Waterloo; E. Mathews, Stationmaster, Waterloo; J. Mumford, Stationmaster, Holborn Viaduct; H. A. Turpin, Stationmaster, Cannon Street.

Specialoid Limited Five-Day Week.—Specialoid Limited announces that it is now operating its factory on a five-day week, and that consequently the works and offices at Finchley and Boreham Wood will be closed on Saturdays. To ensure continuity of supplies to its distributors, its area branches will remain open on Saturday mornings as hitherto.

G.N.R. (Ireland) Dividends.—The directors have resolved, subject to audit, to recommend to the proprietors the payment, on March 15 next, of the following dividends and bonus (less income tax) in respect of the year ended December 31, 1946: Dividend of £2 per cent. (final) on the consolidated 4 per cent. guaranteed stock, making, with the interim dividend of £2 per cent. paid on September 2 last, £4 per cent. for the year; dividend of £4 per cent. on the consolidated 4 per cent. preference stock; dividend of £2 10s. per cent., and a bonus of 10s. per cent., on the ordinary stock. The balance of net revenue available for final dividends amounted to about £259,000. It should, however, be specially noted that this sum was arrived at after crediting a final re-

covery of E.P.T. estimated at £75,000 after the deduction of income tax thereon, and also an over-provision in 1945 for income tax of £34,000, the rate of tax having been reduced subsequently.

Orders for Leyland Vehicles.—Orders to the value of just over 1,000,000 were placed with Leyland Motors Limited during the last three weeks of 1946. Some of the larger orders included: Potteries Motor Traction Co. Ltd. (45 double-deck chassis); Ribbles Motor Services Limited (30 double-deck chassis); Yorkshire Traction Co. Ltd. (30 single-deck chassis); Bolton Corporation (50 double-deck buses); East Midland Motor Services Limited (14 double-deck buses); Stratford-upon-Avon Blue Motors Limited (10 single-deck chassis and 8 double-deck buses); Yorkshire W.D. Transport Limited (15 double-deck chassis); and 100 heavy-duty goods vehicles for oil companies.

East Kent Road Car Co. Ltd.—The report of the East Kent Road Car Co. Ltd. for the year ended September 30, 1946, shows a profit, after providing for taxation and depreciation, of £56,843. Traffic receipts and other income produced £1,218,700, an increase of £225,817. Operating and maintenance expenses, at £665,869, compared with £488,448 in the preceding year. The directors recommend a dividend of 10 per cent. (less income tax) and a bonus of 5 per cent. (less income tax) on the ordinary shares, totalling £37,125, which leaves £30,171 to be carried forward as against £27,440 brought in.

London Transport Fare Increases.—Higher fares will come into force on London Transport services for journeys exceeding certain distances on February 9, in accordance with the increases announced by the Minister of Transport in the House of Commons on November 4 (see our November 8, 1946, issue). The existing 1½d. fare on the road and rail services will be retained and the existing 2d. fares raised to 2½d. On the road services, all existing fares over 2d. will be increased by 1d. On the rail services existing fares of 3d. and 4d. will be increased by 1d. Rail fares over 4d. will remain at present amounts. An order entitled "The London Passenger Transport Board (Additional Charges) Order, 1947," authorising the increases, has now been made, and copies may be obtained from H.M. Stationery Office.

Forthcoming Meetings

February 4 (Tue).—The Institution of Civil Engineers (South Wales and Monmouthshire Association), at the South Wales Institute of Engineers, Park Place, Cardiff, 6 p.m. "Military Railway Bridges over the Seine and Maas, 1944-45," by Lt.-Colonel A. R. Pittendrigh.

Luncheon to Stationmasters and Parcels Agents



A group at the luncheon recently given to London terminal stationmasters and parcels agents by W. H. Smith & Son Ltd. (see accompanying paragraph)

Left to right: Messrs. H. S. Turrell, Stationmaster, Euston, L.M.S.R.; H. C. Greenfield, retired Stationmaster, Waterloo, Southern Railway; F. W. Goring, Stationmaster, Kings Cross, L.N.E.R.; A. T. Chapman, Stationmaster, Victoria, Southern Railway

Railway Stock Market

Earlier in the week business in stock markets declined and small irregular price movements ruled in most sections, although later the new account brought increased buying interest. Industrial shares tended to improve, but on balance showed a wide range of moderate declines, sentiment having remained under the influence of the White Paper on economic affairs, and further news regarding the fuel situation again had a restraining influence. Iron and steels receded, but later, yield considerations attracted buyers.

Colliery shares have been firm generally in view of current break-up value estimates; also on break-up value calculations, Cable & Wireless ordinary stock tended to come into renewed demand. Locomotive engineering and kindred shares reflected the general market trend but were inclined to be more active. North British Locomotive changed hands around 28s., Beyer Peacock at 24s. 9d. and Vulcan Foundry at 31s. 3d. Dealings started around 10s. 9d. in United Steel new 4½ per cent. preference, now 10s. paid. Babcock & Wilcox rallied on market dividend estimates, a moderate increase over last year's 12½ per cent. total being regarded as possible in view of the improvement made in the interim payment, which was 1 per cent. higher at 5 per cent. Tube Investments and Stewarts and Lloyds also regained part of earlier declines.

With attention centred on the forthcoming dividends, and renewed doubts whether the Government will agree to any important amendments to the Transport Bill, home railway stocks have remained a dull market, small declines predominating in accordance with the prevailing trend. There is still a fair amount of selling with a view

to reinvesting into industrial shares and other securities offering larger yields than Government stock; and selling may become more pronounced after the forthcoming dividends. Brokers report that a fair number of holders have decided to await the dividends before making a final decision whether to sell and reinvest, or to hold and await exchange into British Transport stock on the terms laid down in the Transport Bill.

It is assumed from statements by responsible Ministers in the House of Commons that Transport stock will not be irredeemable and that it will carry interest at the rate of 2½ per cent. Presumably the apparent reluctance to set forth the exact details of the stock is due to the possibility that by January 1 next, the vesting date, Mr. Dalton may have achieved some further success in his cheaper money policy.

A similar position exists in regard to Electricity stock, and, moreover, the vesting date is not known, although it is generally expected to be January 1 next as in the case of the railways. Opinion in the City still seems divided as to whether home railway stocks or electric supply shares offer the better means of acquiring in effect a 2½ per cent. Government stock at a discount, but the disposition is for institutional buying to favour railway stocks.

Comparison with a week ago shows that prior charge stocks recorded small declines, but that junior stocks have developed a steadier tendency, awaiting the dividend announcements. Great Western at 57½ has been well maintained, but the 5 per cent. preference eased from 122½ to 121½, and the guaranteed stock from 134 to 132½,

but the 4 per cent. debentures strengthened from 122½ to 123. L.M.S.R. ordinary was 29½, compared with 29¼ a week ago, the senior preference receded from 82½ to 82¼, and the 1923 preference improved from 61½ to 62, and the 4 per cent. debentures strengthened fractionally to 114. Among L.N.E.R. stocks, the second preference eased ½ to 28½, the first preference at 56½ was unchanged on balance, but the first guaranteed was slightly lower at 103, as was the second guaranteed at 97. Southern deferred at 23½ was maintained, also the preferred ordinary at 76, but the 5 per cent. preference lost a point at 120½ and the guaranteed stock was lower at 132½. Reflecting the easier trend, London Transport 5 per cent. "A" stock also eased from 137 to 136, but the "C" stock at 63½ was the same as a week ago. Elsewhere, Metropolitan Assented went back further from 53½ to 52.

Argentine railway stocks have continued to reflect absence of definite news from Buenos Aires, prices again receding, although there appeared to be very little selling. Generally, ordinary or equity stocks had a firmer tendency than debenture stocks. Buenos Ayres Great Southern ordinary eased from 12½ to 12, the 5 per cent. preference fell from 43 to 38½ and the 4 per cent. debentures from 84½ to 80. Buenos Ayres Western ordinary was 14½, against 14½, and the 4 per cent. debentures have come back from 82 to 76. Moreover, Buenos Ayres & Pacific 1912 debentures have come back from 59 to 55, while the ordinary stock was only ½ down at 6. Central Argentine ordinary at 8½ was unchanged on balance; but in common with the general tendency the debentures moved back sharply.

Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open	Week ended	Traffic for week		No. of Week	Aggregate traffic to date			Shares or Stock	Prices			
			Total this year	Inc. or dec. compared with 1944/5		Totals		Increase or decrease		Highest 1945	Lowest 1945	January 28, 1947	
						1946/7	1945/6						
South & Central America													
Antofagasta ...	834	19.1.47	£ 38 450	+ 3,830	3	£ 108,740	£ 94,680	+ £ 14,060	Ord. Stk.	12	8½	9½	
Arg. N.E. ...	753	18.1.47	ps.319,100	+ ps.66,000	29	ps.9,144,500	ps.8,699,300	+ ps. 445,200	"	10	5½	15½	
Bolivar ...	174	Dec., 1946	4,279	- 863	52	51,910	58,425	- 6,515	6 p.c. Deb.	8½	5½	6½	
Brazil ...	—	—	—	—	—	—	—	—	Bonds	25	17	26	
B.A. Pacific ...	2,771	18.1.47	ps.2,050,000	- ps.202,000	29	ps.64,206,000	ps.62,549,000	+ ps.1,657,000	Ord. Stk.	7	5	6	
B.A.G.S. ...	5,080	18.1.47	ps.4,097,000	+ ps.273,000	29	ps.98,587,000	ps.94,308,000	+ ps.4,279,000	Ord. Stk.	13½	10½	12	
B.A. Western...	1,924	18.1.47	ps.1,339,000	+ ps.146,000	29	ps.36,222,000	ps.34,325,000	+ ps.1,897,000	"	12½	9½	14½	
Cent. Argentine Do.	3,700	18.1.47	ps.3,226,550	+ ps.100,700	29	ps.91,644,507	ps.88,760,400	+ ps.2,884,107	"	9½	7	9	
Cent. Uruguay ...	970	18.1.47	36,954	- 6,487	29	1,056,001	1,108,620	- 52,619	Dfd.	5	2½	5	
Costa Rica ...	262	Aug., 1946	36,220	+ 4,160	9	73,313	63,153	+ 10,160	Ord. Stk.	7½	4	9½	
Dorada ...	70	Dec., 1946	32,000	+ 3,124	52	369,575	359,365	+ 10,210	1 Mt. Deb.	103	102	100½	
Entre Rios ...	808	18.1.47	ps.458,200	+ ps.82,500	29	ps.12,426,100	ps.12,221,700	+ ps. 204,400	Ord. Stk.	7½	4½	6½	
G.W. of Brazil ...	1,030	18.1.47	43,500	+ 8,200	3	102,900	89,400	+ 13,500	Ord. Stk.	30½	23½	19½	
Inter. Ctl. Amer.	794	Nov., 1946	\$833,362	+ \$197,150	48	\$9,543,915	\$8,130,214	+ \$1,413,701	5 p.c. Deb.	78	70	65	
La Guaira ...	22½	Dec., 1946	4,705	- 650	52	67,508	74,152	- 6,644	Ord. Stk.	4½	3½	3½	
Leopoldina ...	1,918	18.1.47	67,217	+ 12,307	3	165,811	137,963	+ 27,848	Ord. Stk.	4½	3½	3½	
Mexican ...	483	31.5.46	ps.1,464,000	+ ps.459,100	22	ps. 7,706,200	ps.13,441,600	+ ps.5,220,200	Ord. Stk.	4½	3½	3½	
Midland Uruguay	319	Dec., 1946	14,771	- 6,303	26	109,866	115,875	- 6,009	Ord. Sh.	75½	67½	73½	
Nitrate ...	382	15.1.47	7,771	- 3,245	2	7,771	11,016	- 3,245	Ord. Sh.	75½	67½	73½	
N.W. of Uruguay ...	113	Dec., 1946	4,837	+ 1,288	26	32,945	35,276	- 2,330	Pr. Li. Stk.	79½	77	50	
Paraguay Cent. ...	274	17.1.47	£60,675	+ £10,215	29	£1,826,187	£1,758,251	+ £67,936	Pr. Li. Stk.	10½	7½	8½	
Peru Corp. ...	1,059	Dec 1946	147,153	+ 1,946	26	920,202	849,478	+ 70,724	Ord. Stk.	60½	50½	129½	
Salvador ...	100	Aug., 1946	c108,000	+ c14,000	9	c190,000	c189,000	+ c1,000	Ord. Sh.	17½	10½	18½	
San Paulo ...	153½	Dec., 1946	3,680	+ 480	26	29,410	15,520	+ 13,890	Ord. Stk.	3	1	1½	
Taltal ...	156	Dec., 1946	3,680	+ 480	26	29,410	15,520	+ 13,890	"	—	—	—	
United of Havana	1,301	19.1.47	56,072	+ 9,490	29	1,432,502	1,350,306	+ 82,196	"	—	—	—	
Uruguay Northern	73	Dec., 1946	1,242	- 637	26	7,887	10,943	- 3,056	"	—	—	—	
Canada													
Canadian National	23,482	Nov., 1946	9,282,000	+ 705,500	48	91,193,750	99,564,250	- 8,370,500	—	—	—	—	
Canadian Pacific	17,037	21.1.47	1,339,000	+ 7,250	3	3,592,250	3,748,000	- 155,750	Ord. Stk.	24	14½	18½	
Various													
Barsi Light†	202	30.12.46	22,725	- 5,107	35	185,040	179,450	+ 5,580	Ord. Stk.	131	123	112½	
Beira ...	204	Sept., 1946	90,848	+ 17,176	52	950,694	920,575	+ 30,119	Pr. Sh.	10	8½	6	
Egyptian Delta	607	15.1.47	22,167	+ 1,560	41	465,630	437,730	+ 27,900	B. Deb.	71	55½	73½	
Manila ...	—	—	—	—	—	—	—	—	Inc. Deb.	97½	85	65	
Mid. of W. Australia...	277	Nov., 1946	10,257	- 6,808	22	79,714	81,902	- 2,188	"	—	—	—	
Nigeria ...	1,900	Nov., 1946	461,603	+ 49,595	34	3,076,711	2,032,386	+ 1,044,325	"	—	—	—	
Rhodesia ...	2,445	Sept., 1946	51,147	+ 24,052	52	617,663	609,763	+ 7,900	"	—	—	—	
South African	13,323	28.12.46	1,033,319	+ 201,381	39	44,822,986	39,442,964	+ 4,380,022	"	—	—	—	
Victoria ...	4,774	Aug., 1946	1,188,889	- 54,185	—	—	—	—	"	—	—	—	

† Receipts are calculated @ 1s. 6d. to the rupee